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PART B

SOLAR - GEOPHYSICAL DATA

ISSUED

JANUARY 1964

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

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PART B

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

Issued
31 Jan. 1964

SOLAR - GEOPHYSICAL DATA

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The descriptive text was republished November, 1963.

DAILY SOLAR INDICES

Nov. 1963	American Relative Sunspot Numbers R_A'
1	26
2	32
3	30
4	33
5	23
6	14
7	11
8	11
9	7
10	0
11	0
12	2
13	0
14	0
15	8
16	14
17	21
18	24
19	14
20	23
21	31
22	39
23	31
24	30
25	35
26	22
27	28
28	22
29	21
30	24
Mean:	19.2

Dec. 1963	Zürich Provisional Relative Sunspot Numbers R_Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	22	79
2	21	80
3	20	79
4	20	77
5	20	76
6	16	76
7	14	77
8	13	78
9	33	78
10	24	79
11	23	80
12	13	82
13	8	81
14	7	79
15	0	81
16	0	78
17	7	78
18	17	79
19	8	78
20	17	79
21	11	79
22	11	77
23	9	76
24	16	76
25	8	--
26	7	74
27	0	74
28	0	73
29	0	72
30	0	71
31	0	71
Mean:	11.8	77.2

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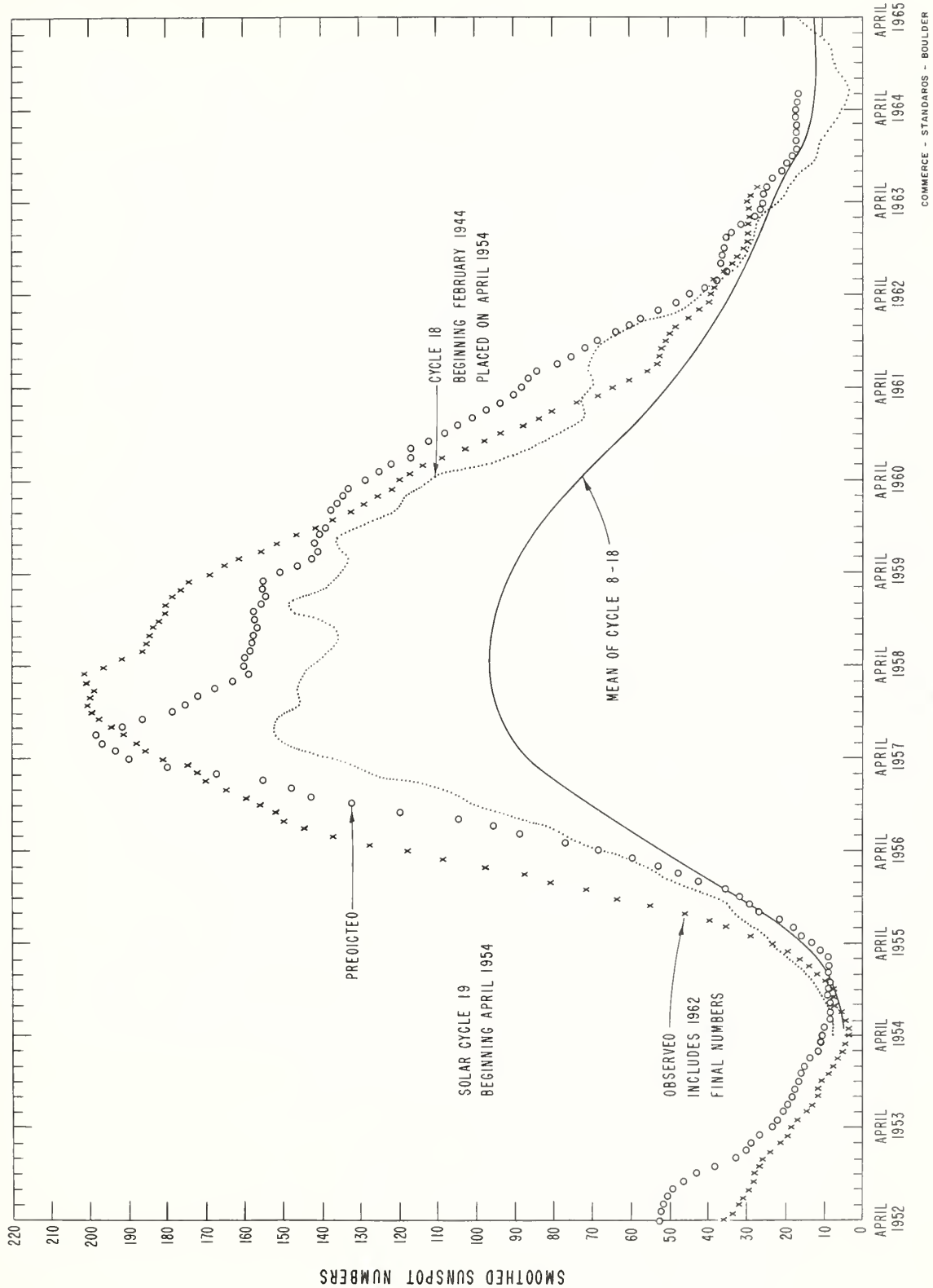

PREDICTED AND OBSERVED SUNSPOT NUMBERS

CALCIUM PLAGE AND SUNSPOT REGIONS

DECEMBER 1963

Dec. 1963	LAT.	McMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTATIONS)	DATE FIRST SEEN (1)	DURATION (DAYS)(1)	CMP VALUES		HISTORY
				AREA	INT.					AREA	COUNT	
02.0	N17	7060	New	(100)	(2)	b ⌒ d	1	12/4	2			
02.1	N07	7056	New	200	2	b ⌒ d	1	12/3	3			
03.2	S14	7051	New	200	3	b ⌒ ℓ	1	11/30	~ 8			
04.3	S08	7062	New	(500)	(3)	b ⌒ ℓ	1	~ 12/9	2			
05.0	N08	7052	7019	200	1.5	ℓ ⌒ d	5	11/30	>8			
05.0	N16	7057 (2)	New	100	2	b – d	1	12/3	1			
05.2	S10	7058	New (3)	200	1	b ⌒ d	1	12/3	5			
06.9	N08	7063	New	(200)	(2)	b ⌒ ℓ	1	~ 12/9	>4	20	1	b ⌒ ℓ
06.9	S10	7053	New	1700	3	ℓ – ℓ	1	11/30	14	320	3	ℓ ⌒ ℓ
08.8	S09	7059	New	400	2	ℓ – ℓ	1	12/3	11			
10.9	N17	7061	7028	700	2	ℓ – ℓ	6	12/4	13			
11.5	N12	7066 (2)	New	100	2.5	b – d	1	12/10	1			
12.5	N08	7076 (2)	New	(100)	(1.5)	b – d	1	12/16	1			
13.2	N20	7067 (2)	New	100	2	b – d	1	12/12	1			
13.7	S10	7064	7033	200	2.5	ℓ ⌒ d	3	≥12/9	5			
13.8	N01	7069 (2)	New	100	1.5	b – d	1	12/13	1			
13.9	N15	7078 (2)	New	(100)	(1.5)	b – d	1	12/17	1			
14.6	N09	7070	New	600	1	b ⌒ d	1	12/13	2			
14.6	N05	7079 (2)	New	(300)	(1.5)	b – d	1	12/17	1			
14.9	S11	7071	7033	800	1.5	ℓ ⌒ d	3	12/13	4			
15.8	N30	7065	7041	1400	3.5	ℓ – ℓ	1	12/9	13			
15.9	S34	7072 (2)	New	(300)	(1)	b – d	1	12/13	1			
17.1	N04	7074	New	100	1.5	b ⌒ d	1	12/14	4			
17.1	S13	7073	7036	900	2	b ⌒ d	3	<12/12	>10			
17.4	N17	7075 (2)	New	100	1.5	b – d	1	12/15	1			
19.8	N15	7068	(4)	3400	3	ℓ ⌒ ℓ	4	12/12	14	80	1	b ⌒ ℓ
21.8	N29	7082 (2)	New	200	1.5	b – d	1	12/21	1			
23.0	N01	7077	7044	400	2	ℓ – ℓ	3	12/16	13			
24.2	N05	7080	7047	(1300)	(2.5)	ℓ – ℓ	2	12/18	13			
25.1	N13	7081	New	600	3	ℓ – ℓ	1	12/19	12			
26.0	N16	7086 (2)	New	(100)	(2)	b – d	1	12/30	1			
27.0	N32	7083	New	300	1.5	b – d	1	12/27	2			
27.8	S12	7089 (2)	New	(700)	(1.5)	b – d	1	12/31	1			
29.2	S30	7087 (2)	New	100	1.5	b – d	1	12/30	1			
29.5	S04	7085	New	200	1.5	b ⌒ ℓ	1	12/29	6			
29.8	N34	7090	New	300	2.5	b ⌒ ℓ	1	12/31	3			

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(1) Some of this information is only approximate. Due to inclement weather conditions no calcium plage data were secured at the McMath-Hulbert Observatory on December 8, 11, 22, 23, 24, 26.
(2) These were very small and ephemeral plages - last for only one day.
(3) New - in position of 7025.
(4) 7038, 7039, 7040.

DECEMBER 1963

Dec. 1963	TIME MEAS UT	LAT	MER DIST	TYPE	Dec. 1963	TIME MEAS UT	LAT	MER DIST	TYPE
1	1915	N04	W70	αp	10	1840	S10	W55	αp
		S10	E70	αp			N10	W53	αp
2	1810	S17	E07	β*			N30	E64	αf*
		S10	E56	βp	11	1800	N28	E50	βp+
3	2150	S15	W10	βp*	12	No Obs.			
		S10	E39	βp	13	1615	N29	E24	αf*
4	1605	S15	W22	αf**	14-15	No Spots			
		S10	E30	βp	16-25	No Obs.			
5	1610	S10	W73	αf	26-29	No Spots			
		S10	E17	βp	30	No Obs.			
6	1625	S10	E04	βp	31	No Spots			
7	1700	S10	W10	βp					
8-9	No Obs.								

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* Polarities reversed for old cycle.
** In reference to old cycle.
\+ Polarities for new cycle.

PROVISIONAL CORONAL LINE EMISSION INDICES

DECEMBER 1963

CMP Dec 1963	North East Quadrant (observed 7 days earlier)				South East Quadrant (observed 7 days earlier)				South West Quadrant (observed 7 days later)				North West Quadrant (observed 7 days later)			
	G_6	G_1	R_6	R_1	G_6	G_1	R_6	R_1	G_6	G_1	R_6	R_1	G_6	G_1	R_6	R_1
1	x	x	17	25	3	4	21	25	x	x	x	x	x	x	x	x
2	x	x	17a	21a	x	x	15a	19a	x	x	x	x	x	x	x	x
3	8	10	19	23	8	10	23	30	x	x	x	x	x	x	x	x
4	16	22	16	21	12	21	15	20	x	x	x	x	x	x	x	x
5	x	x	15	20	x	x	19	24	x	x	x	x	x	x	x	x
6	18	24	20	36	25	59	24	36	26	56	9	12	11	17	6	6
7	15	18	18	24	24	53	26	56	10	15	10	15	7	8	7	8
8	19	24	16	20	13	24	18	24	4	6	19	25	6	7	15	19
9	26	34	20	24	17	31	26	32	7	9	6	8	13	15	6	6
10	17	27	14	16	6	6	15	22	3	5	16	20	8	12	12	16
11	14	20	9	12	4	6	7	8	6	8	12	16	16	20	10	12
12	20	28	14	18	7	11	14	22	4	4	12	15	15	20	10	12
13	15	25	16	20	9	20	13	16	x	x	x	x	x	x	x	x
14	19	38	24	30	16	30	15	17	x	x	x	x	x	x	x	x
15	x	x	x	x	x	x	x	x	10	15	12	20	19	37	16	32
16	x	x	x	x	x	x	x	x	12	20	x	x	18	30	x	x
17	x	x	x	x	x	x	x	x	15	25	18	23	27	34	16	30
18	x	x	x	x	x	x	x	x	11	14	19	21	33	50	18	24
19	x	x	x	x	x	x	x	x	11	25	19	24	49	90	19	36
20	44	62	9	12	5	6	11	12	x	x	x	x	x	x	x	x
21	15	21	14	20	5	11	20	25	11	25	17	25	24	31	8	12
22	13	18	18	24	4	6	22	25	17	45	12	13	26	39	13	22
23	31	51	8	10	6	16	8	10	12	34	20	23	11	31	14	16
24	15	27	22	38	3	7	21	28	6	10	14	17	24	36	8	8
25	16	28	13	15	3	6	13	22	8	17	18	20	9	14	18	22
26	9	14	18	25	3	4	14	15	5	6	11	12	7	9	10	16
27	x	x	x	x	x	x	x	x	4	8	12	25	8	11	10	15
28	x	x	x	x	x	x	x	x	4	5	11	15	7	8	10	12
29	6	9	8	11	4	7	9	14	x	x	x	x	x	x	x	x
30	6	8	x	x	4	6	x	x	5	6	16	20	7	8	15	19
31	11	14	17	31	10	14	20	22	x	x	x	x	x	x	x	x

x = no observations * = yellow line emission a = index computed from low weight data

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SOLAR FLARES

DECEMBER 1963

OBSERVATORY	DATE DEC 1963	OBSERVED UNIVERSAL TIME START	OBSERVED UNIVERSAL TIME END	OBSERVED UNIVERSAL TIME MAX. PHASE	LOCATION APPROX. LAT.	LOCATION APPROX. MER. DIST.	LOCATION McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEASUREMENTS MEAS. AREA Sq. Deg.	MEASUREMENTS CORR. AREA Sq. Deg.	MEASUREMENTS MAX. WIDTH Ha	MEASUREMENTS MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
	01	0000	0725	NO FLARE	PATROL											
BUCHAREST	01	0759 E	0806 D		S08	E69			1-	3						
	01	1005	1335	NO FLARE	PATROL											
MCMATH	01	1500	1506	1501	S09	E68	7053		1-	1	1501	.20	.60			
OTTAWA	01	1501	1505	1502	S06	E66			1-	2	1502	.76	1.32			
SAC PEAK	01	1504	1510	1506	S07	E67			1-	2		.41	.72		18	
	01	1530	1535	NO FLARE	PATROL											
SAC PEAK	01	2058	2107	2102	N06	W68			1-	2		.41	.72		17	
SAC PEAK	01	2220	2225	2221	N05	W70			1-	2		.21	.35		18	
LOCKHEED	01	2220	2236	2226	S08	E63			1-	2	2226	.40	.70		10	
SAC PEAK	01	2224	2233	2227	S07	E63			1-	2		.35	.56		18	
	01	2355	2400	NO FLARE	PATROL											
	02	0000	0715	NO FLARE	PATROL											
CAPRI-S	02	1153 E	1233 D		N05	W80			1-	2	1223	.40	1.80			
SAC PEAK	02	1543	1556	1546	N05	W80			1-	3		.60	1.53		16	
OTTAWA	02	1545	1555	1551	N02	W80			1-	1	1551	.76	2.05			
SAC PEAK	02	1611	1633	1618	N04	W82			1-	3		.27			16	
LOCKHEED	02	1748	1820	1800	S01	W80			1-	1	1800	.30	.90		10	
	02	2355	2400	NO FLARE	PATROL											
	03	0000	0755	NO FLARE	PATROL											
MANILA	03	0253 E	0317		S13	E02			1-	2	0258	.25	.25			
	03	1235	1300	NO FLARE	PATROL											
	03	1345	1400	NO FLARE	PATROL											
SAC PEAK	03	1633	1651	1636	S11	E42			1-	3		.27	.31		18	
	04	0000	0725	NO FLARE	PATROL											
BUCHAREST	04	0735 E	0739 D		S14	W18			1-	1						
	04	0910	1350	NO FLARE	PATROL											
SALTSJOBADN	04	1205 E	1220 D		S11	E22			1-	1		1.50	1.70			
	04	2350	2400	NO FLARE	PATROL											
	05	0000	0925	NO FLARE	PATROL											
	05	1140	1150	NO FLARE	PATROL											
	05	1155	1205	NO FLARE	PATROL											
	05	1340	1350	NO FLARE	PATROL											
MCMATH	05	1400	1405	1401	S13	W75	7054		1-	1	1401	.10	.40			
	05	1945	2400	NO FLARE	PATROL											
	06	0000	0805	NO FLARE	PATROL											
MANILA	06	0028	0037	0031	S12	E13			1-	1	0031	.25	.25			
CAPRI-S	06	1215 E	1237 D		S10	E10	7053	22 D	1	2	1218	2.20	2.30			
SAC PEAK	06	1951	2005	1954	S08	E02			1-	3		1.75	1.71		17	
LOCKHEED	06	1951	2020	1954	S11	E01			1-	2	1954	1.00	1.00		20	
	06	2150	2400	NO FLARE	PATROL											
	07	0000	0805	NO FLARE	PATROL											
	07	1305	1340	NO FLARE	PATROL											
	07	2355	2400	NO FLARE	PATROL											
	08	0000	0800	NO FLARE	PATROL											

SOLAR FLARES

DECEMBER 1963

OBSERVATORY	DATE DEC 1963	OBSERVED UNIVERSAL TIME			LOCATION APPROX.		McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS					PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	LAT.	MER. DIST					TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hg	MAX INT. %	
MANILA	08	0810	0817	0813	S08	W15			1-	2	0813	.20	.20			
	08	1530	1650	NO FLARE	PATROL											
	08	1710	1730	NO FLARE	PATROL											
	08	1735	1810	NO FLARE	PATROL											
	08	1835	1915	NO FLARE	PATROL											
	08	1950	2020	NO FLARE	PATROL											
	08	2035	2400	NO FLARE	PATROL											
	09	0000	0755	NO FLARE	PATROL											
WENDEL	09	0833	0853		S11	W30	7053	20	1				3.00			
CAPRI-S	09	0836 E	0853 D		S09	W29			1-	3	0839	1.20	1.40			
	09	1515	1520	NO FLARE	PATROL											
	09	1540	1610	NO FLARE	PATROL											
	09	1640	1910	NO FLARE	PATROL											
	09	2035	2400	NO FLARE	PATROL											
	10	0000	0725	NO FLARE	PATROL											
BUCHAREST	10	0920 E	0957 D	0924	N10	W46	7063	37 D	1	2						
WENDEL	10	0924 E	1000 D		N09	W48	7063	36 D	1				3.00			
	10	1020	1040	NO FLARE	PATROL											
WENDEL	10	1053 E	1106 D		N09	W49			1-							
	10	1055	1635	NO FLARE	PATROL											
WENDEL	10	1118 E	1132 D		N09	W49			1-							
WENDEL	10	1159 E	1208 D		N09	W50			1-							
	10	1650	1655	NO FLARE	PATROL											
	10	1735	2400	NO FLARE	PATROL											
	11	0000	0835	NO FLARE	PATROL											
	11	0930	1330	NO FLARE	PATROL											
	11	1350	1420	NO FLARE	PATROL											
	11	1900	2400	NO FLARE	PATROL											
	12	0000	0820	NO FLARE	PATROL											
	12	0940	1300	NO FLARE	PATROL											
	12	1310	1405	NO FLARE	PATROL											
	12	1410	1515	NO FLARE	PATROL											
	12	1700	1715	NO FLARE	PATROL											
	12	1730	1925	NO FLARE	PATROL											
	12	1940	2220	NO FLARE	PATROL											
	12	2350	2400	NO FLARE	PATROL											
	13	0000	0925	NO FLARE	PATROL											
MANILA	13	0342 E	0404		N29	E39			1-	1	0348	.50	.60			
MANILA	13	0447	0508	0455	N31	E42			1-	2	0455	.50	.60			
MANILA	13	0559	0614	0608	N31	E41			1-	1	0608	.50	.60			
CAPRI-S	13	0927 E	0946		N28	E28	7065	19 D	1+	1	0939	2.50	3.20			
	13	1035	1055	NO FLARE	PATROL											
	13	1235	1410	NO FLARE	PATROL											
LOCKHEED	13	1925	1945	1930	N11	E80	7068	20	1	2	1930	1.20	3.60		20	
	13	2350	2400	NO FLARE	PATROL											
	14	0000	0810	NO FLARE	PATROL											

SOLAR FLARES

DECEMBER 1963

OBSERVATORY	DATE DEC 1963	OBSERVED UNIVERSAL TIME START	OBSERVED UNIVERSAL TIME END	OBSERVED UNIVERSAL TIME MAX. PHASE	LOCATION APPROX. LAT.	LOCATION APPROX. MER DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEASUREMENTS MEAS. AREA Sq. Deg.	MEASUREMENTS CORR. AREA Sq. Deg.	MEASUREMENTS MAX. WIDTH Ha	MEASUREMENTS MAX. INT *0	PROVISIONAL IONOSPHERIC EFFECT
	14	1045	1105	NO FLARE	PATROL											
	14	1110	1300	NO FLARE	PATROL											
	14	1305	1435	NO FLARE	PATROL											
LOCKHEED	14	2058	2135	2106	N67	W22			1-	2	2106	.30	.60		10	
LOCKHEED	14	2058	2135	2124	N67	W22			1-							
LOCKHEED	14	2255	2325	2300	N32	E13			1-	2	2300	.30	.30		10	
	14	2350	2400	NO FLARE	PATROL											
	15	0000	1220	NO FLARE	PATROL											
	15	1230	1345	NO FLARE	PATROL											
OTTAWA	15	1522	1536	1532	N31	W03			1-	2	1532	.47	.47			
OTTAWA	15	1542	1630	1602	N31	W00			1-	2	1602	1.52	1.52			
LOCKHEED	15	1557 F	1640	1600 U	N31	E00			1-	2	1600	1.20	1.20		10	
MCMATH	15	1613 E	1638		N31	E02	7065		1-	1	1613	.60	.70			
	16	0000	1145	NO FLARE	PATROL											
	16	1205	1300	NO FLARE	PATROL											
	16	1310	1320	NO FLARE	PATROL											
	17	0000	1020	NO FLARE	PATROL											
	17	1030	1055	NO FLARE	PATROL											
	17	1100	1205	NO FLARE	PATROL											
	17	1210	1305	NO FLARE	PATROL											
	17	1310	1325	NO FLARE	PATROL											
	18	0000	0805	NO FLARE	PATROL											
MANILA	18	0536	0547	0538	N23	W32			1-	2	0538	.20	.22			
	18	0825	0905	NO FLARE	PATROL											
	18	0915	0920	NO FLARE	PATROL											
	18	0925	1000	NO FLARE	PATROL											
	18	1005	1235	NO FLARE	PATROL											
	18	1240	1405	NO FLARE	PATROL											
	18	1410	1440	NO FLARE	PATROL											
	18	2350	2400	NO FLARE	PATROL											
	19	0000	1000	NO FLARE	PATROL											
	19	1005	1115	NO FLARE	PATROL											
	19	1120	1205	NO FLARE	PATROL											
	19	1210	1340	NO FLARE	PATROL											
LOCKHEED	19	1655 E	1715	1658 U	N14	E73			1-	1	1658	.20	.40		10	
	19	1950	2000	NO FLARE	PATROL											
	19	2005	2115	NO FLARE	PATROL											
	19	2235	2400	NO FLARE	PATROL											
	20	0000	1000	NO FLARE	PATROL											
MANILA	20	0148	0156	0151	N14	E64			1-	2	0151	.20	.32			
	20	1005	1335	NO FLARE	PATROL											
LOCKHEED	20	1630	1700	1638	N15	E57			1-	1	1638	.30	.40		10	
MCMATH	20	1729 E	1733 D		N13	E57	7081		1-	1	1731	.30	.60			
OTTAWA	20	1736 E	1741 D	1740	N15	E57			1-	2	1740	.60	.87			
LOCKHEED	20	2251	2307	2253	N16	E47			1-	1	2253	.30	.30		10	

SOLAR FLARES

DECEMBER 1963

OBSERVATORY	DATE DEC 1963	OBSERVED UNIVERSAL TIME START	END	MAX PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq Deg.	CORR. AREA Sq Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
	20	2355	2400	NO FLARE	PATROL											
	21	0000	1305	NO FLARE	PATROL											
	21	1345	1410	NO FLARE	PATROL											
	21	1830	1840	NO FLARE	PATROL											
	21	1915	1925	NO FLARE	PATROL											
	21	2055	2150	NO FLARE	PATROL											
	21	2345	2400	NO FLARE	PATROL											
	22	0000	0815	NO FLARE	PATROL											
	22	1310	1320	NO FLARE	PATROL											
	23	0000	0755	NO FLARE	PATROL											
	23	0800	0820	NO FLARE	PATROL											
WENDEL	23	1239 E	1258 D		N13	W62			1-							
SAC PEAK	23	1541	1557	1543	N12	W49			1-	3		.33	.41		18	
	23	2210	2220	NO FLARE	PATROL											
	23	2355	2400	NO FLARE	PATROL											
	24	0000	0805	NO FLARE	PATROL											
MANILA	24	0400 E	0406		N14	E11			1-	1	0402	.20	.20			
MANILA	24	0628	0640	0631	N10	W53			1-	2	0631	.40	.56			
MANILA	24	0816	0830	0820	N10	W54			1-	2	0820	.20	.28			
WENDEL	24	0844	0913 D		N13	W60	7068	29 D	1				3.00			
	24	0905	0955	NO FLARE	PATROL											
	24	1020	1030	NO FLARE	PATROL											
ONDREJOV	24	1057 E	1104 D		N12	W59			1-	3	1102			3.10		
	24	1235	1325	NO FLARE	PATROL											
	24	1330	1415	NO FLARE	PATROL											
	24	2355	2400	NO FLARE	PATROL											
	25	0000	1415	NO FLARE	PATROL											
	25	2355	2400	NO FLARE	PATROL											
	26	0000	0825	NO FLARE	PATROL											
	26	0850	0915	NO FLARE	PATROL											
	26	0950	1140	NO FLARE	PATROL											
	26	1505	1530	NO FLARE	PATROL											
	26	1615	1700	NO FLARE	PATROL											
	26	2325	2400	NO FLARE	PATROL											
	27	0000	0820	NO FLARE	PATROL											
MANILA	27	0459	0525	0504	N16	W29			1-	2	0504	1.30	1.43			
	27	0945	1110	NO FLARE	PATROL											
	27	1145	1225	NO FLARE	PATROL											
	27	1320	1355	NO FLARE	PATROL											
	27	2220	2250	NO FLARE	PATROL											
	27	2355	2400	NO FLARE	PATROL											
	28	0005	0825	NO FLARE	PATROL											
	28	1915	1920	NO FLARE	PATROL											

SOLAR FLARES

DECEMBER 1963

OBSERVATORY	DATE DEC 1963	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER DIST	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
LOCKHEED	28	2133	2300	2215	N02	E09			1-	2	2215	.20	.20		10	
	28	2355	2400	NO FLARE	PATROL											
	29	0005	0825	NO FLARE	PATROL											
LOCKHEED	29	1619	1638	1626	N50	E55			1-	2	1626	.20	.40		10	
	29	2005	2110	NO FLARE	PATROL											
	29	2135	2400	NO FLARE	PATROL											
	30	0000	0955	NO FLARE	PATROL											
	30	1005	1350	NO FLARE	PATROL											
OTTAWA	30	1408	1416	1411	S12	E40			1-	1	1411	.47	.53			
OTTAWA	30	1617	1645		N13	W78			1-	1	1632	.47	1.18			
SAC PEAK	30	1640	1653	1648	N15	W79			1-	3		.27	.68		18	
	30	2355	2400	NO FLARE	PATROL											
	31	0000	1355	NO FLARE	PATROL											
	31	2355	2400	NO FLARE	PATROL											

COMMERCE - STANDARDS - BOULDER

ATHENES	ATHENS, CREECE
BAKOU	PIRCULI, USSR
CAPETOWN	ROYAL OBSERVATORY, CAPE OF GOOD HOPE
CAPRI F	CAPRI, ITALY (GERMAN)
CAPRI S	CAPRI, ITALY (SWEDISH)
CRIMÉE	SIMEIZ, USSR
HERSTMONCEU	ROYAL GREENWICH OBSERVATORY, HERSTMONCEUX, ENGLAND
HTR-PROVEN	HAUTE-PROVENCE
HONOLULU	HAWAII, USA
IKOMASAN	KYOTO, JAPAN
KIEV KO	KIEV GAO, USSR
KIEV KY	KIEV UNIVERSITY, USSR
LOCKHEED	LOS ANCELES, CALIF., USA
MCMATH	MCMATH-HULBERT PONTIAC, MICH., USA
MOSCOU	MOSCOW-GAISH, USSR
NEW SCHAUIN	FREIBURC, CFR
NERA	NEDERHORST den BERCH, NETHERLANDS
NIZMIR	KRASNAYA PAKHRA, USSR
SAC PEAK	SACRAMENTO PEAK, N.MEX. USA
SALTSJÖBADEN	STOCKHOLM, SWEDEN
SCHAUINS	SCHAUINSLAND, CFR
TACHKENT	TASHKENT, USSR
WENDEL	WENDELSTEIN, CFR

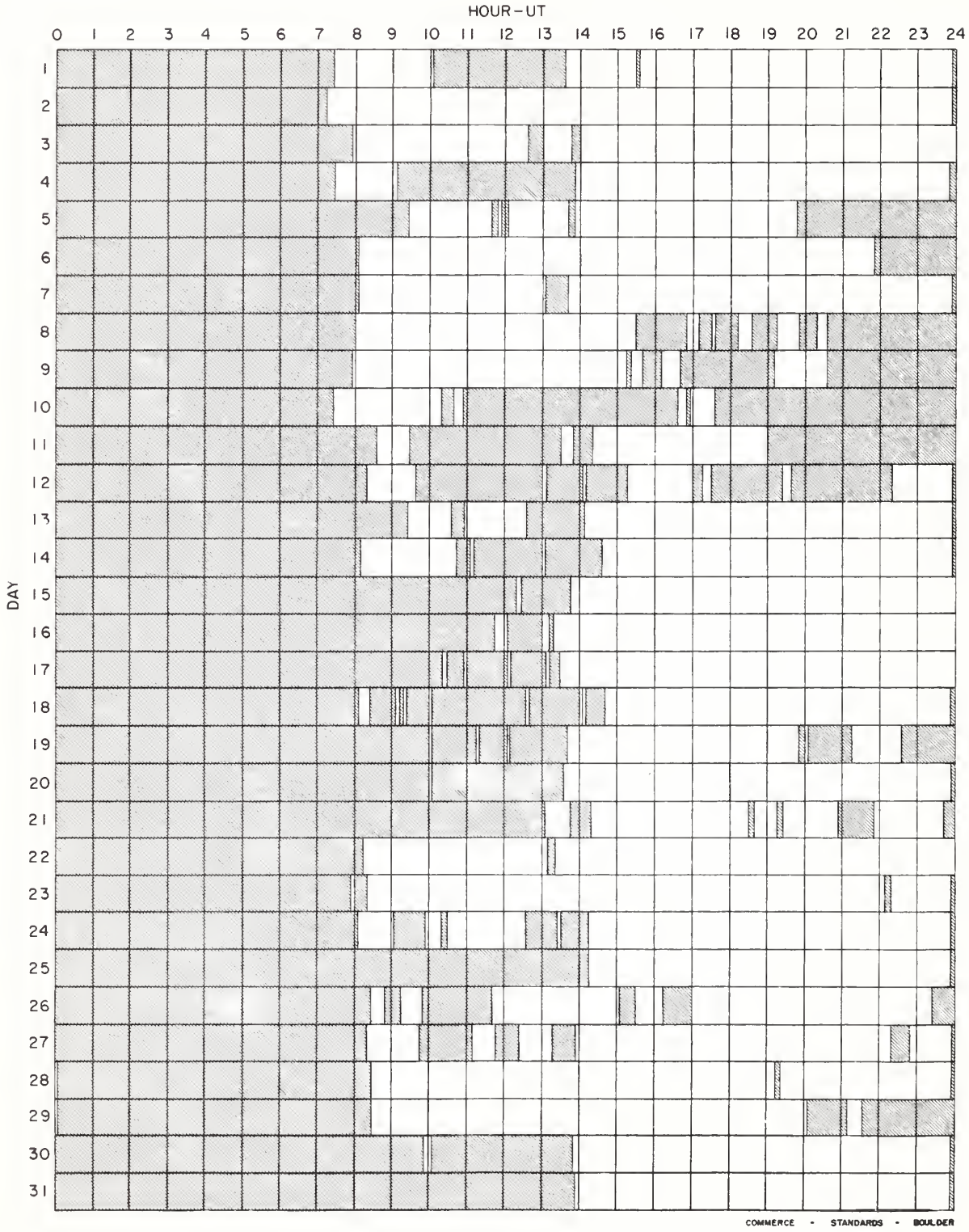
ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

E = LESS THAN D = GREATER THAN U = APPROXIMATE □= NOT REPORTED.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

DECEMBER 1963



Observatories Included:

Arcetri	Capri-S (Swedish)	McMath-Hulbert	Ottawa
Bucharest	Herstmonceux	Ondrejov	Sacramento Peak

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE SEPT 1963	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. *.	PROVISIONAL IONOSPHERIC EFFECT
	01	0200	0235	NO FLARE	PATROL											
	01	0240	0300	NO FLARE	PATROL											
CAPRI-F	01	1507 E	1514		N08	W02			1-			15.20	15.20			
TACHKENT	02	0311	0324	0315	N09	W12			1-	2	0316	.45	.50	2.10	65	
	03	0200	0230	NO FLARE	PATROL											
	03	0235	0300	NO FLARE	PATROL											
ABASTUMANI	04	0557 E	0625 D	0604	N04	W00			1-	3		.90	.92		64	
ATHENES	04	0602	0615		N04	W02	6946	13	1	3		2.10	2.20			
	04	1805	1810	NO FLARE	PATROL											
	04	1840	1845	NO FLARE	PATROL											
	04	1950	2005	NO FLARE	PATROL											
	04	2040	2050	NO FLARE	PATROL											
	04	2210	2235	NO FLARE	PATROL											
	04	2320	2345	NO FLARE	PATROL											
	05	0200	0220	NO FLARE	PATROL											
	05	0255	0300	NO FLARE	PATROL											
CLIMAX	05	2312	2316	2313	N21	W25			1-			.70	.70			
CAPETOWN	06	1002	1030	1010	N11	W31			1-		1010	1.50	1.70			
CAPRI-F	06	1008	1020 D	1010	N12	W30	6947	12 D	1		1012	~ 3.50	4.20			
	06	1435	1445	NO FLARE	PATROL											
	07	0200	0215	NO FLARE	PATROL											
CLIMAX	08	1553	1559	1556	N15	W61			1-			.60	.90			
HONOLULU	08	1816	1842	1820	N03	W78	6946	26	1	3	1820	1.96	3.59			
	09	0315	0340	NO FLARE	PATROL											
CAPETOWN	09	0911	1040	0921	N04	W75	6947	89	1+		0921	.70				
NIZMIR	09	0915	0956 D	0923	N07	W73	6947	41 D	1			1.80			50	
	10	0225	0230	NO FLARE	PATROL											
	10	0425	0430	NO FLARE	PATROL											
	10	0500	0510	NO FLARE	PATROL											
ABASTUMANI	10	0712 E	0722 D	0716	S05	E72	6961	10 D	1+	3		1.80	6.57		51	
	11	0200	0500	NO FLARE	PATROL											
BUCHAREST	11	0730 E	0747 D	0735	N06	E65			1-	2						
ONDREJOV	11	0834	0845	0836	S05	E70			1-	3	0836			2.00		
CAPETOWN	11	0835	0846	0837	S03	E78			1-		0837	.40				
	12	0200	0350	NO FLARE	PATROL											
	12	0405	0425	NO FLARE	PATROL											
ABASTUMANI	12	0521 E	0649 D	0637	S08	E57			1-	3		.90	1.91		55	
	12	1100	1125	NO FLARE	PATROL											
	12	1130	1135	NO FLARE	PATROL											
CAPRI-F	12	1237 E			S08	E52			1-							

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE SEPT 1963	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg	MAX WIDTH Hα	MAX INT %	PROVISIONAL IONOSPHERIC EFFECT
CAPRI-F	12	1237 E			S08	E52			1-							
CAPRI-F	12	1420 E	1435 D		N05	E35			1-		1428	≤ 1.50				
	12	1905	1930	NO FLARE	PATROL											
VOROSHILOV	13	0046 E	0138 D		S10	E45	6961	52 D	1		0047	2.06			75	
	13	0415	0420	NO FLARE	PATROL											
ABASTUMANI	13	0535 E	0828 D	0747	S10	E42	6961	173 D	1	2		1.80	2.56		68	
BUCHAREST	13	0707 E	0714 D		S10	E44			1-	2						
BUCHAREST	13	0803 E	0811 D		S02	E26			1-	2						
BUCHAREST	13	1003 E	1027 D	1005	S09	E39	6961	24 D	1	2						
KODAIKNL	13	1007	1012		S08	E42			1-	2	1007			1.40	100	
CAPETOWN	13	1011 E	1028		S09	E40	6961	17 D	1		1011	1.90	2.60			
ATHENES	13	1015 E	1022		S10	E40	6961	7 D	1	2		1.50	2.10			
BAKOU	13	1015	1029	1020	S08	E42	6961	14	1	2	1020	2.19	2.63		75	
BAKOU	13	1015	1029	1020	S10	E40	6961	14	1+	2	1020	1.82	2.15		122	
KHARKOV	13	1047 E	1155 D		N14	E90	6964	68 D	2	3	1054	2.87	14.20	3.80		
CAPETOWN	13	1256	1312	1300	S09	E37			1-		1300	1.00	1.30			
TACHKENT	14	0300 E	0606	0357	N13	E87	6964	186 D	1	1	0357	.72	5.20	4.70	100	
KODAIKNL	14	0331	0400	0331	N11	E85	6964	29	2	2	0348	.64	9.20	2.20		
KODAIKNL	14	0510	0527		S10	E32			1-	2		.32	.40			
KODAIKNL	14	0446	0700 D	0520	N14	E85	6964	134 D	2	2	0448	.64	9.20	3.00	122	
ABASTUMANI	14	0504	0737 D	0522	N14	E85	6964	153 D	1	1		.90	4.47		76	
ATHENES	14	0515 E	0607		N14	E84	6964	52 D	2	3		1.40	7.30			
IKOMASAN	14	0604	0640		N11	E90	6964	36	1	1	0615				110	
CAPETOWN	14	0636 E	0812		N12	E86	6964	96 D	1+		0636	.70				
NIZMIR	14	0700	0801	0719	N11	E87	6964	61	1			1.80			60	
CAPRI-F	14	0712 E	0722	0712	N12	E81	6964	10 D	1			≈ 1.50	4.80			
KODAIKNL	14	0650	□	0650	S10	E30			1-	2		.96	1.16			
NIZMIR	14	0938	0957	0948	N11	E87	6964	19	1+			2.27			65	
CAPETOWN	14	0940	1002	0942	N12	E86	6964	22	1		0942	.80				
CAPETOWN	14	1111	1138	1115	N12	E86	6964	27	1		1115	1.10				
CAPETOWN	14	1151	1209	1156	N12	E86	6964	18	1		1156	.90				
CAPETOWN	14	1404	1413	1406	N12	E84			1-		1406	.60				
CAPRI-F	14	1443 E	1458	1443	S10	E25			1-			1.00	1.00			
CAPRI-F	14	1502 E	1612 D		S10	E23			1-			< .50				
HONOLULU	14	1754	1808	1758	N12	E75	6964	14	1+	3	1758	1.65	3.90			
HONOLULU	14	1842	1850	1844	N14	E76	6964	8	1+	3	1844	.93	2.20			
HONOLULU	14	1902	1908	1904	N15	E76			1-	3	1904	.62	1.50			
HONOLULU	14	2202	2211 D	2206	N14	E76	6964	9 D	2+	3	2206	5.40	12.30			
HONOLULU	14	2310 E	2320	2314	S09	E18	6961	10 D	1	2	2314	2.70	2.80			
IKOMASAN	15	0020 E	0130 D	0027	N12	E75	6964	70 D	2	3	0027	3.00	9.70	6.00	130	
HONOLULU	15	0022	0100 D	0042	N14	E78	6964	38 D	3+	2	0042	8.30	21.00			S-SWF
IRKUTSK	15	0039	0059 D	0044	S31	E65		20 D	2+	1		2.50	7.18		190	
IRKUTSK	15	0133 E	0219	0138	S32	E80		46 D	2	1		1.40	8.70			
TACHKENT	15	0318 E	0447	0345	N12	E74	6964	89 D	1	3	0345	2.01	6.00	3.10	55	
KODAIKNL	15	0344	0428	0419	N10	E71	6964	44	2	2		2.90	9.92		114	
MITAKA	15	0410 E	0413		N13	E70	6964	3 D	1	1	0410	.50		3.85	96	
ABASTUMANI	15	0459	0805 D	0509	N11	E72	6964	186 D	2	1		1.62	5.27		103	

SOLAR FLARES

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OBSERVATORY	DATE SEPT 1963	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH He	MAX. INT %	PROVISIONAL IONOSPHERIC EFFECT
TACHKENT	15	0500	0546	0511	N12	E68	6964	46	2	3	0511	8.25	20.60	5.10	90	
KODAIKNL	15	0502	0530	0508	N13	E67	6964	28	3	2	0508	7.09	18.92	1.60	114	
IKOMASAN	15	0508	0515		N13	E73	6964	7	1	1	0508	1.60	5.20	2.51	100	
ATHENES	15	0701	0712		N13	E70			1-	4		.30	.90			
BAKOU	15	0832	0842	0835	N14	E75	6964	10	1	1	0835	1.37	3.32		62	
BUCHAREST	15	0813 E	1214 D	1016	N04	E66	6964	241 D	1	2						
BAKOU	15	0840	0853	0842	N09	E65	6964	13	1	1	0842	1.00	2.60		72	
BAKOU	15	0840	0853	0842	N07	E66	6964	13	1	1	0842	1.19	3.36		60	
BUCHAREST	15	0843 E	0942 D		S02	E63			1-	2						
BAKOU	15	0902	0915	0905	S09	E05			1-	1	0905	1.83	1.90		57	
CAPETOWN	15	0932	0958	0940	S11	E05			1-		0940	1.50	1.60			
ONDREJOV	15	0937 E	0946		S11	E06	6961	9 D	1+	3	0939			3.20		
KHARKOV	15	0937	1000 D		S10	E07	6961	23 D	1	2	0952	3.43	3.60	2.10		
BUCHAREST	15	0952 E	0959 D		S09	E10	6961	7 D	1	2						
BUCHAREST	15	1007 E	1015 D		S02	E62			1-	2						
CAPETOWN	15	1012	1034	1018	N11	E68	6964	22	1		1018	1.30	3.30			
BAKOU	15	1013	1032	1018	N13	E72	6964	19	1	1	1018	.81	4.25		60	
BAKOU	15	1013	1032	1018	N15	E74	6964	19	1+	1	1018	1.09	8.14		60	
ONDREJOV	15	1014 E	1020 D		N10	E64	6964	6 D	1	3						
BAKOU	15	1030	1047	1033	N14	E70	6964	17	1	1	1033	1.19	2.90		69	
CAPETOWN	15	1240	1303	1246	N11	E66	6964	23	1		1246	1.10	2.60			
ONDREJOV	15	1244	1251	1246	N14	E62			1-	3	1246			2.40		
CAPRI-F	15	1246 E	1304		N12	E65			1-			< .50	< 1.00			
KIEV-KO	15	1252	1300	1254	S12	E04			1-	3	1254	1.55			52	
CAPETOWN	15	1257	1308	1301	S12	E03			1-		1301	1.20	1.30			
CAPETOWN	15	1306	1323	1309	N12	E68			1-		1309	.80	2.10			
CAPRI-F	15	1306	1332	1310	N13	E66	6964	26	1			≈ 1.50	3.00			S1-S-SWF
HONOLULU	15	1827	1836	1828	N10	E61			1-	3	1828	.52	.89			
HONOLULU	15	1851	1855 D	1852	S06	W08			1-	2	1852	.31	.31			
HONOLULU	15	1917	1923 D	1919	N10	E61			1-	2	1919	.62	.94			
HONOLULU	15	2016	2110	2033	N10	E61	6964	54	3	3	2033	12.00	19.00			S-SWF
HONOLULU	15	2110	2136	2115	N09	E61	6964	26	2	3	2115	2.40	3.80			S1-S-SWF
HONOLULU	15	2146	2200	2151	N09	E61	6964	14	2	3	2151	5.60	8.90			
HONOLULU	15	2333	2354	2341	N11	E61	6964	21	1	2	2341	2.50	3.80			
HONOLULU	15	2356	0008	0000	N11	E61			1-	2	0000	1.00	1.60			
HONOLULU	16	0006	0020	0008	N10	E61			1-	2	0008	1.00	1.60			
HONOLULU	16	0012	0024	0014	N11	E61	6964	12	1	3	0014	1.75	2.60			
HONOLULU	16	0036	0138	0048	N10	E61	6964	62	2	3	0048	5.80	9.00			
	16	0200	0225	NO FLARE	PATROL											
	16	0235	0245	NO FLARE	PATROL											
KODAIKNL	16	0245	0300	0253	N13	E59	6964	15	1	2					114	
TACHKENT	16	0300 E	0617 D	0421	N12	E57	6964	197 D	2	2	0421	8.21	14.20	4.80	110	
KODAIKNL	16	0325	0432	0422	N10	E56	6964	67	3	2		9.67	17.75			
KODAIKNL	16	0325	□	0325	S08	E01			1-	2		.32	.33			
KODAIKNL	16	0335	□		S12	E02			1-	2						
ATHENES	16	0536 E	0612		N13	E56	6964	36 D	1	3		1.60	2.70			
ABASTUMANI	16	0545 E	0805 D	0727	N15	E54	6964	140 D	1+	1		4.50	7.70		71	
BUCHAREST	16	0637 E	0647 D		N13	E55	6964	10 D	1	2						
BAKOU	16	0651 E	0817 D	0729	N08	E50			1-	3		1.60	.91		62	
BAKOU	16	0651 E	0817 D		N10	E51	6964	86 D	1	3		2.20	1.37		70	

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BAKOU	16	0651 E	0817 D		N13	E55	6964	86 D	1	3		2.70	1.73		56	
BAKOU	16	0651 E	0817 D	0741	N11	E51	6964	86 D	1	3		2.60	1.64		56	
BAKOU	16	0651 E	0817 D	0747	N12	E52	6964	86 D	1	3		3.30	1.82		53	
NIZMIR	16	0727 E	0752	0740	N11	E60	6964	25 D	1			3.61			60	
BUCHAREST	16	0730 E	0749 D	0731	N13	E54	6964	19 D	2	2						
ONDREJOV	16	0734 E	0756		N12	E53	6964	22 D	1+	3	0738			2.50		
NIZMIR	16	0814	0819	0817	S11	E00			1-			.90			60	
KODAIKNL	16	0817	0820		S09	W04			1-	1		1.93	2.02			
CAPETOWN	16	0935	1058	0952	N12	E56	6964	83	2		1027	3.70	6.40			
CAPETOWN	16	0935	1058	1027	N12	E56			2							
NIZMIR	16	0936	1006 D	0943	S11	E60	6965	30 D	1+			5.41			110	
CAPRI-F	16	0940 E	0958 D	0944	N13	E53	6964	18 D	1			2.00	3.10			
KHARKOV	16	0940	1050	1026	N13	E53	6964	70	2	2	1026	8.04	13.20	2.60		
ONDREJOV	16	0945 E	1001		N12	E52			1-	3	0952			2.20		
BUCHAREST	16	0945 E	1006 D		N13	E53	6964	21 D	1	2						
BUCHAREST	16	1014 E	1049 D	1026	N14	E53	6964	35 D	2	2						
ONDREJOV	16	1016 E	1047		N12	E52	6964	31 D	2	3	1021			2.80		S-SWF
NEW SCHAUIN	16	1018 E	1042		N13	E53	6964	24 D	1+	2			5.00			
KODAIKNL	16	1033 E	1047 D		N12	E52	6964	14 D	3	1	1033	9.02	15.01	1.60		
CAPRI-F	16	1033 E	1048	1035	N12	E53	6964	15 D	1			2.50	3.80			
BUCHAREST	16	1104 E	1113 D		N06	W15			1-	2						
ONDREJOV	16	1106 E	1113		S07	W16			1-	3	1108			2.10		
NEW SCHAUIN	16	1106 E	1116		S06	W15			1-	2			1.00			
BUCHAREST	16	1132 E	1137 D		N12	E52			1-	2						
BUCHAREST	16	1158 E	1216 D		N14	E55			1-	2						
CAPRI-F	16	1159 E	1209		N14	E55			1-			<1.00				
ONDREJOV	16	1204 E	1219		N15	E55	6964	15 D	1	3	1206			2.00		
ONDREJOV	16	1237 E	1259 D		S09	W04	6961	22 D	1	3	1239			3.00		
ONDREJOV	16	1258	1420 D		N13	E51	6964	82 D	3	2	1306			10.50		
CAPETOWN	16	1300	1357 D	1305	N11	E49	6964	57 D	2		1305	5.40	8.40			
BUCHAREST	16	1302 E	1325 D	1305	N12	E49	6964	23 D	3	2						S-SWF
KIEV-KO	16	1303	1316	1305	N10	E50	6964	13	2	3	1305	8.25			95	
BUCHAREST	16	1340 E	1347 D		N12	E49	6964	7 D	1	2						
NEW SCHAUIN	16	1343 E	1402 D		N13	E50	6964	19 D	1	2			3.00			
BUCHAREST	16	1355 E	1415 D		N12	E50	6964	20 D	1	2						
ONDREJOV	16	1427 E	1445 D		S09	W09			1-	2	1432			2.10		
ONDREJOV	16	1420 E	1521 D		N13	E47	6964	61 D	1+	1	1513			3.20		
NEW SCHAUIN	16	1434 E	1440		N13	E50			1-	2			1.50			
NEW SCHAUIN	16	1440 E	1643 D		N11	E48	6964	123 D	2	2			6.00			S-SWF
ATHENES	16	1450 E	1537 D		N12	E51	6964	47 D	1+	3		2.50	3.90			
CAPRI-F	16	1502 E	□		N13	E49	6964		1			2.50	3.80			
HONOLULU	16	2116 E	2136 D	2116	N12	E45	6964	20 D	1	1	2116	2.50	3.00			
HONOLULU	16	2227 E	2228 D	2227	S10	W11			1-	1	2227	1.65	1.65			
HONOLULU	16	2227	2228 D		N12	E45	6964	1 D	□	1						
	16	2325	2330	NO FLARE	PATROL											
	16	2355	2400	NO FLARE	PATROL											
	17	0005	0020	NO FLARE	PATROL											
	17	0100	0205	NO FLARE	PATROL											
VOROSHILOV	17	0211	0248	0220	N11	E44			1-	2		.63			83	
KODAIKNL	17	0213 E	0216 D		N13	E43			1-	2						

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IRKUTSK	17	0213 E	0232 D	0223	S19	E34	6965	19 D	1+	2		.85	1.05		80	
VOROSHILOV	17	0245	0359 D	0349	N13	E46			1-	1		1.34			85	
TACHKENT	17	0300 E	0525	0344	N13	E45	6964	145 D	1+	3	0405	7.29	10.20	2.50	155	
KODAIKNL	17	0344 E	0415 D	0345	N13	E42	6964	31 D	1	2	0345	1.61	2.20	1.60	114	
KODAIKNL	17	0451	0510	0455	N14	E43	6964	19	1	1		3.22	4.48			
BUCHAREST	17	0634 E	0732 D		N13	E41	6964	58 D	2	2						
ABASTUMANI	17	0636 E	0804	0654	N14	E45	6964	88 D	1+	1		7.20	11.70		74	
CRIMEE	17	0641 E	0740 D	0659	N11	E41	6964	59 D	1	1	0659	1.80				
KODAIKNL	17	0646	0730	0703	N13	E41	6964	44	2	1	0702	7.73	10.41	1.44		
ONDREJOV	17	0651	0711		N12	E40	6964	20	1	3	0655			2.70		
NIZMIR	17	0658 E	0732	0659	N10	E43	6964	34 D	1□			2.68			50	
ONDREJOV	17	0822	0850		N13	E41	6964	28	1	3	0828			2.30		
BUCHAREST	17	0823 E	0920 D	0828	N13	E40	6964	57 D	1+	2						S-SWF
CAPETOWN	17	0824	0909 D	U	N14	E43	6964	45 D	1		0828	1.60	2.20			
NIZMIR	17	0825	0829 D	0826	N10	E43	6964	4 D	1			2.68			60	
NEW SCHAUIN	17	0827 E	0855 D		N13	E42	6964	28 D	1	2			3.00			
KODAIKNL	17	0835 E	0836 D		N13	E43			1-	1		1.30	1.80			
NIZMIR	17	0840	0925 D	0903	N10	E43	6964	45 D	1		0930	1.34			55	
ONDREJOV	17	0855	0910		N13	E42	6964	15	1	3	0904			1.60		
BUCHAREST	17	0854 E	0902 D		S05	W20			1-	2						
BUCHAREST	17	0945 E	0950 D		S05	W20			1-	2						
BUCHAREST	17	0955 E	1043 D	1014	N13	E39	6964	48 D	1	2						
ATHENES	17	0958	1038		N12	E43	6964	40	2	4		4.30	5.80			
NIZMIR	17	1000	1001 D	1000	N10	E43	6964	1 D	1			2.22			55	
KHARKOV	17	1000 E	1032		N13	E40	6964	32 D	1+	3	1005	5.78	7.30	2.40		
ONDREJOV	17	1000 E	1039		N13	E41	6964	39 D	1+	3	1001			2.90		
NEW SCHAUIN	17	1024 E	1035 D		N13	E41	6964	11 D	1	2			4.00			
BUCHAREST	17	1057 E	1105 D		N13	E41			1-	2						
NEW SCHAUIN	17	1102 E	1102 D		N12	E38			1-	2			.50			
KIEV-KO	17	1236	1244 D	1238	N12	E45			1-	2	1238	2.58			63	
CLIMAX	17	1409	1459	1414	N12	E42			1-			.50	.60			
CLIMAX	17	1432	1445	1435	N14	E41			1-			.50	.60			
CLIMAX	17	1550	1555	1552	N13	E43			1-			.50	.60			
CLIMAX	17	2203 E	2222	2210	S10	W29			1-			.80	.90			
CLIMAX	17	2203 E	2237 D	2228	N13	E34	6964	34 D	1			2.20	2.40			
	17	2250	2310	NO FLARE	PATROL											
	18	0000	0005	NO FLARE	PATROL											
	18	0045	0100	NO FLARE	PATROL											
	18	0105	0140	NO FLARE	PATROL											
TACHKENT	18	0320	0600 D	0348	N12	E28	6964	160 D	1+	3	0329	4.56	5.20	2.50	130	
KODAIKNL	18	0328	0447	0408	N12	E28	6964	79	2	2		4.51	5.15		122	S1-S-SWF
ABASTUMANI	18	0552	0806 D	0756	N15	E28	6964	134 D	2	3		5.40	6.40		96	
ABASTUMANI	18	0614	0658	0620	N11	E30	6964	44	1+	2		1.80	2.10		100	
CRIMEE	18	0616 E	0628 D	0620	N08	E30			1-	1	0620	.90				
NIZMIR	18	0704 E	0904	0735	N14	E29	6964	120 D	1			4.49			50	
BUCHAREST	18	0719 E	0729 D		N12	E31			1-	2						
ATHENES	18	0749 E	0754 D		N13	E30	6964	5 D	1	3		2.10	2.50			
BUCHAREST	18	0910 E	0950 D		N13	E27	6964	40 D	1	2						
NEW SCHAUIN	18	0915 E	0921 D		N13	E28	6964	6 D	1				3.00			
CAPETOWN	18	0915	0943	0926	N12	E28	6964	28	1		0926	3.20	3.60			

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NIZMIR	18	0918	0930	0927	N14	E29	6964	12	1			4.43			55	
KHARKOV	18	0922	0932		N12	E27	6964	10	1	2	0930	2.89	3.20	2.80		
ONDREJOV	18	0924	0931		N11	E28	6964	7	1	3	0926			3.30		
BUCHAREST	18	1002 E	1004 D		N14	E21			1-	2						
BUCHAREST	18	1006 E	1019 D		N14	E26			1-	2						
BUCHAREST	18	1026 E	1042 D		N13	E26			1-	2						
BUCHAREST	18	1107 E	1122 D		N13	E26			1-	2						
CAPETOWN	18	1150	1340	1212	N12	E25	6964	110	1		1212	1.40	1.50			
BUCHAREST	18	1153 E	1226 D		N13	E27	6964	33 D	1	2						
KIEV-KO	18	1200 E	1325 D		N13	E26	6964	85 D	1+	1	1218	6.19			63	
CLIMAX	18	1351	1457	1418	N15	E26	6964	66	2			7.90	7.90			
CAPETOWN	18	1410	1418 D		N14	E22			1-		1418	1.10	1.20			
NEW SCHAUIN	18	1411 E	1445 D		N12	E25	6964	34 D	2	2			8.00			S1-S-SWF
NEW SCHAUIN	18	1616 E	1624 D		N12	E24	6964	8 D	1	2			3.00			
CLIMAX	18	1701	1710	1706	N15	E26			1-			.70	.70			
CLIMAX	18	1815 E	1911 D		N14	E23			1-		1907	.50	.50			
HONOLULU	18	2236	2344 D		N10	E17	6964	68 D	2	1	2302	5.10	5.10			
CLIMAX	18	2243 E	0036 D	2324	N12	E20	6964	113 D	1			3.60	3.60			
VOROSHILOV	18	2248 E	0013		N12	E17	6964	85 D	1	2	2317	3.59			65	
IKOMASAN	19	0050	0130 D		N10	E15			1-	2	0050	4.00	4.20		90	
KODAIKNL	19	0439	□		N13	E18			1-	2		.64	.68			
ABASTUMANI	19	0550	0650	0611	S13	W41	6961	60	1	2		1.80	2.80		61	
BUCHAREST	19	0850 E	0901 D	0853	S10	W48			1-	2						
CAPRI-F	19	0908 E	0930	0910	N14	E13	6964	22 D	1				3.00	3.10		
KHARKOV	19	0923	0940 D	0924	N13	E14	6964	17 D	1	3	0930	2.27	2.00	1.90		
	19	1715	1720	NO FLARE	PATROL											
HONOLULU	19	1928	1936 D	1930	N13	E10	6964	8 D	1	2	1930	3.61	3.61			
HONOLULU	19	2042	2046	2044	N12	E07			1-	2	2044	.62	.62			
HONOLULU	19	2058	2105	2059	N12	E07			1-	1	2059	.31	.31			
HONOLULU	19	2118	2130	2120	S12	W55	6961	12	1	3	2120	2.06	3.01			
HONOLULU	19	2232	2240	2234	N12	E10			1-	2	2234	1.24	1.24			
HONOLULU	19	2242	2250 D	2244	N12	E04	6964	8 D	1	2	2244	2.48	2.48			
HONOLULU	19	2258	2305 D	2301	N10	E07	6964	7 D	2+	2	2301	10.34	10.34			S-SWF
HONOLULU	19	2353	0005		N12	E06	6964	12	1	1	2357	2.27	2.27			
HONOLULU	20	0010	0016	0011	N11	E06			1-	2	0011	.93	.93			
VOROSHILOV	20	0037	0227	0054	N14	E08	6964	110	1	1		2.42			76	
HONOLULU	20	0047	0100	0053	N12	E06			1-	3	0053	1.55	1.55			
IKOMASAN	20	0052	0220 D		N12	E10	6964	88 D	1	2	0152	3.20	3.30		100	
	20	0240	0245	NO FLARE	PATROL											
TACHKENT	20	0302	0305	0302	N10	E05			1-	2	0302	1.45	1.50		55	
TACHKENT	20	0458	0550 D	0523	N16	E08	6964	52 D	1	2	0519	2.00	2.00	2.00	70	
BAKOU	20	0713	0805 D	0716	N12	E10	6964	52 D	1+	2			5.47		80	
BUCHAREST	20	0713 E	0904 D	0717	N14	W05	6964	111 D	2	2						S1-S-SWF
ATHENES	20	0715 E	0747		N12	E05			1-	3		1.20	1.20			
NIZMIR	20	0715 E	0755	0717	N15	E08	6964	40 D	1+		0713	10.83			60	
CRIMEE	20	0715 E	0817 D	0718	N15	E05	6964	62 D	1+	1	0718	4.50				
ONDREJOV	20	0724 E	1004 D		N16	E07	6964	160 D	2	2	0728			4.00		
ATHENES	20	0811 E	0828 D		N14	E04			1-	2		2.00	2.00			
BUCHAREST	20	0911 E	0937 D		N12	W02			1-	2						

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ONDREJOV	20	1301 E	1327		N14	E01	6964	26 D	1	1	1305			3.30		
ONDREJOV	20	1354 E	1416		N10	W05			1-	2	1401			3.40		
HONOLULU	20	2351	0201	0007	N11	W09	6964	130	3	3	0007	17.70	17.70			S-SWF
IRKUTSK	21	0039 E	0057	0045	N18	W04	6964	18 D	2	1		6.17	6.29		90	
	21	0230	0300	NO FLARE	PATROL											
TACHKENT	21	0300 E	0447 D	0348	N13	W09	6964	107 D	1+	2	0350	13.20	13.60	3.10	90	
TACHKENT	21	0300 E	0447 D	0354	N13	W09			1+							
KODAIKNL	21	0342	0402	0351	N14	W10		20	2	3		6.45	6.59		114	
KODAIKNL	21	0437	0450 D	0450	N18	E00			1-	2		.32	.33			
KODAIKNL	21	0541	0623 D	0623	N14	W13	6964	42 D	1	2		2.58	2.68			
ATHENES	21	0543 E	0608		N13	W15	6964	25 D	1+	3		3.90	4.10			
ONDREJOV	21	0615 E	0812		N12	W11	6964	117 D	1+	3	0632			4.40		
CAPETOWN	21	0935 E	1002		N17	W12	6964	27 D	1		0935	2.50	2.60			
BUCHAREST	21	0941 E	0943 D		N15	W08			1-	2						
CAPRI-F	21	1013 E	1038 D		N11	W10			1-			< 1.50	< 2.00			
CAPRI-F	21	1013 E	1038 D		N13	W13			1-			< 1.50	< 2.00			
BUCHAREST	21	1015 E	1020 D		N12	W08			1-	2						
CAPRI-F	21	1137 E	1148 D		N13	W10			1-			1.50	2.00			
CAPETOWN	21	1249	1325	1259 U	N17	W12			1-		1259	1.60	1.70			
CAPETOWN	21	1305	1322	1308	S10	W88			1-		1308	.30				
ONDREJOV	21	1308	1317	1309	S08	W74	6961	9	1	3	1309			5.60		
ONDREJOV	21	1403 E	1432		N13	W14	6964	29 D	1	3	1407			3.40		
KIEV-KO	21	1405 E	1408 D	1408	N11	W16	6964	3 D	1	1	1408	2.58			57	
CLIMAX	21	2209	2218	2214	N12	W22			1-			.30	.30			
	22	0230	0335	NO FLARE	PATROL											
	22	0345	0500	NO FLARE	PATROL											
BUCHAREST	22	0724 E	0738 D		N16	W20			1-	3						
CAPRI-F	22	0730 E	0752 D		N14	W24			1-			< 1.50				
BUCHAREST	22	0810 E	0822 D		N16	W21			1-	3						
CAPRI-F	22	1010 E	1025 D	1010 U	N13	W26			1-							
CAPRI-F	22	1107 E	1151 D		N17	W23	6964	44 D	1			≈ 3.00	3.50			
KIEV-KO	22	1130	1155 D	1134	N11	W28	6964	25 D	1	2	1134	4.64			59	
ONDREJOV	22	1322	1337	1324	N12	W28			1-	3	1324			3.70		
	23	0215	0230	NO FLARE	PATROL											
	23	0320	0325	NO FLARE	PATROL											
	23	0340	0345	NO FLARE	PATROL											
KODAIKNL	23	0347	0422		N13	W30			1-	1		.32	.37			
	23	0350	0355	NO FLARE	PATROL											
	23	0445	0455	NO FLARE	PATROL											
CAPRI-F	23	0654 E	0710 D		N14	W33			1-			< 1.00	< 2.00			
CAPRI-F	23	1051 E	1112 D		N13	W41			1-			< 1.00	< 2.00			
ONDREJOV	23	1233 E	1255		N17	W38	6964	22 D	1	1	1242			2.70		
CAPRI-F	23	1234 E	1246 D	1234 U	N16	W36	6964	12 D	1			2.00	2.60			
ONDREJOV	23	1419	1443		N17	W39			1-	1	1423			3.00		
CLIMAX	23	1533	1542 D		N18	W40			1-		1542	1.00	1.10			
CLIMAX	23	1742	1752	1746	N15	W39			1-			.60	.70			
CLIMAX	23	1807	1813 D	1809	N15	W39			1-			.40	.50			
IKOMASAN	23	2312	2353		N11	W51			1-	3	2320	2.00	3.00		80	

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE SEPT 1963	OBSERVED UNIVERSAL TIME START	OBSERVED UNIVERSAL TIME END	OBSERVED UNIVERSAL TIME MAX. PHASE	LOCATION APPROX. LAT.	LOCATION APPROX. MER. DIST.	LOCATION McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
KODAIKNL	24	0248	□		N15	W43			1-	2		.32	.44			
KODAIKNL	24	0351	□		N10	W54			1-	2		.32	.56			
MITAKA	24	0500	0509	0504	N16	W46	6964	9	1	2	0501	1.60	2.16	1.77	105	
MITAKA	24	0502	0533	0508	N14	W42	6964	31	1	2	0508	1.01	1.32	2.10	131	
TACHKENT	24	0502 E	0619	0606	N15	W49	6964	77 D	1	2	0509	6.38	9.60	1.90	70	
BUCHAREST	24	0724 E	0833 D		N14	W53	6964	69 D	1	2						
BUCHAREST	24	0747 E	0751 D		N15	W48			1-	2						
ONDREJOV	24	0751	0822	0812	N11	W54	6964	31	1	3	0812			4.00		
BUCHAREST	24	0752 E	0812 D		N12	W54			1-	2						
NIZMIR	24	0759 E	0845 D	0810	N13	W59	6964	46 D	1+			4.95			65	
CAPRI-F	24	0801 E	0830 D	0808	N09	W57	6964	29 D	1			3.00	4.90			
BUCHAREST	24	0850 E	0853 D		N15	W48			1-	2						
ONDREJOV	24	1222 E	1233	1229	N16	W50			1-	3	1229			2.60		
CLIMAX	24	1438	1524	1457	N16	W53			1-			1.50	1.90			
CAPRI-F	24	1439	1525 D	1446	N17	W51	6964	46 D	2			5.00	7.30			SI-S-SWF
ONDREJOV	24	1448	1521		N16	W51	6964	33	1+	3	1452			3.90		
CLIMAX	24	1705	1711	1707	N17	W53			1-			.20	.30			
CLIMAX	24	1957	2046	2003	N16	W56			1-			.50	.70			
CLIMAX	24	2344	2400	2349	N16	W60			1-			.60	.90			
HONOLULU	24	2346	0002	2350	N18	W58			1-	2	2350	.83	1.21			
	25	0140	0200	NO FLARE	PATROL											
	25	0215	0310	NO FLARE	PATROL											
	25	0325	0330	NO FLARE	PATROL											
KODAIKNL	25	0350	□		N15	W62			1-	2		.64	1.42			
	25	0400	0500	NO FLARE	PATROL											
ATHENES	25	0556	0615		N13	W65	6964	19	1	3		1.00	2.20			
TACHKENT	25	0600	0618	0606	N12	W69	6964	18	1	2	0612	2.28	5.80	2.50	95	
CRIMEE	25	0601 E	0631 D	0607	N14	W63	6964	30 D	1	1	0607	1.34				
ABASTUMANI	25	0603 E	0637 D	0604	N15	W65	6964	34 D	1+	3		2.26	5.30		87	
TACHKENT	25	0702	0708	0702	N13	W70			1-	2	0705	.83	2.20	1.20	55	
BUCHAREST	25	0703 E	0708 D		N14	W65			1-	2						
BUCHAREST	25	0834 E	0839 D		N14	W66			1-	2						
NIZMIR	25	0918	0936	0926	N13	W66			1-			.90			55	
BUCHAREST	25	0924 E	0930 D		N12	W65			1-	2						
NIZMIR	25	0927	0936	0930	N15	W72			1-			1.34			50	
KIEV-KO	25	0943 E	0947 D	0944	N12	W75	6964	4 D	1+	3	0944	2.58			77	
NIZMIR	25	0943 E	0950 D	0944	N15	W72	6964	7 D	1+			1.80			75	
BUCHAREST	25	0945 E	0949 D		N14	W67	6964	4 D	1	2						
BUCHAREST	25	0955 E	0959 D		N12	W66			1-	2						
NIZMIR	25	1039 E	1058 D	1054	N13	W66	6964	19 D	1		1036	1.34			60	
	25	1120	1125	NO FLARE	PATROL											
	25	1130	1140	NO FLARE	PATROL											
CAPETOWN	25	1201 E	1222		N12	W70	6964	21 D	1		1201	1.00	2.80			
CAPETOWN	25	1226	1250	1233	N12	W70			1-		1233	.50	1.40			
BUCHAREST	25	1243 E	1257 D	1253	N12	W67	6964	14 D	1	2						
CAPETOWN	25	1255	1319	1310	N12	W70			1-		1310	.60	1.70			
CAPETOWN	25	1326	1333	1329	N12	W70			1-		1329	.40	1.10			
CLIMAX	25	1357	1402	1359	N12	W69			1-			.50	.90			
CLIMAX	25	1413	1422	1416	N12	W69			1-			.90	1.50			
CLIMAX	25	1841	1848		N12	W71			1-		1842	.20	.40			

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE SEPT 1963	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Ha	MAX. INT. °.	PROVISIONAL IONOSPHERIC EFFECT
	26	0115	0140	NO FLARE	PATROL											
	26	0220	0230	NO FLARE	PATROL											
	26	0240	0300	NO FLARE	PATROL											
CRIMEE	26	0638 E	0924 D	0721	N14	W78	6964	166 D	2+	2	0721	9.00				
BAKOU	26	0644 E	0739 D	0720	N18	W85	6964	55 D	2	2		8.30	1.64		84	
BAKOU	26	0644 E	0739 D		N15	W90	6964	55 D	1+	2		8.20	1.09		68	
BAKOU	26	0644 E	0739 D		N15	W80	6964	55 D	1+	2		5.90	1.44		75	
ONDREJOV	26	0646 E	0906	0712	N13	W78	6964	140 D	3	3	0712			9.10		
ABASTUMANI	26	0648	0915 D	0719	N14	W90	6964	147 D	3	1		9.00	29.30		80	
ATHENES	26	0653	0820	0713	N15	W76	6964	87	3	3		3.90	14.10			
BUCHAREST	26	0653 E	0825 D	0722	N14	W77	6964	92 D	3	2						
CAPETOWN	26	0657 E	0929	0716	N15	W82	6964	152 D	3		0716	3.20				
KODAIKNL	26	0710 E	0819 D		N11	W78	6964	69 D	3+	1		5.16	24.79			S1-S-SWF
KIEV-KO	26	0710	0830 D	0728	N14	W80	6964	80 D	2	1	0728	8.25			91	
TACHKENT	26	0710	0929 D	0715	N13	W80	6964	139 D	3+	2	7155	4.56	18.00	5.30	310	
CAPRI-F	26	0742 E	0944	0742 U	N18	W75	6964	122 D	3		0750	6.50	17.80			
NIZMIR	26	0757 E	0919	0757	N11	W80	6964	76 D	2		1102	5.41			65	
BUCHAREST	26	0846 E	0902 D		N14	W78			1-	2						
CAPRI-F	26	1350 E	1409 D		N15	W83	6964	19 D	1			1.00	3.50			
CLIMAX	26	1355	1359	1356	N14	W90			1-			.40	1.10			
CAPETOWN	26	1355	1402	1356	N12	W88			1-		1356	.40				
	27	0050	0500	NO FLARE	PATROL											
	28	0210	0420	NO FLARE	PATROL											
	29	0330	0540	NO FLARE	PATROL											
	30	0040	0220	NO FLARE	PATROL											
	30	0255	0305	NO FLARE	PATROL											
	30	0310	0620	NO FLARE	PATROL											

COMMERCE - STANDARDS - BOULDER

These flare reports are addenda to the September 1963 flares published in CRPL-F 230 B for October 1963.

ATHENES	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NEDERHORST den BERGH, NETHERLANDS
BAKOU	PIRCULI, USSR	IKOMASAN	KYOTO, JAPAN	NIZMIR	KRASNAYA PAKHRA, USSR
CAPETOWN	ROYAL OBSERVATORY, CAPE OF GOOD HOPE	KIEV KO	KIEV GAO, USSR	SAC PEAK	SACRAMENTO PEAK, N.MEX. USA
CAPRI F	CAPRI, ITALY (GERMAN)	KIEV KY	KIEV UNIVERSITY, USSR	SALTSJÖBADEN	STOCKHOLM, SWEDEN
CAPRI S	CAPRI, ITALY (SWEDISH)	LOCKHEED	LOS ANGELES, CALIF., USA	SCHAUINS	SCHAUINSLAND, GFR
CRIMÉE	SIMEIZ, USSR	MCMATH	MCMATH-HULBERT PONTIAC, MICH., USA	TACHKENT	TASHKENT, USSR
HERSTMONCEU	ROYAL GREENWICH OBSERVATORY, HERSTMONCEUX, ENGLAND	MOSCOU	MOSCOW-GAISH, USSR	WENDEL	WENDELSTEIN, GFR
HTE-PROVEN	HAUTE-PROVENCE	NEW SCHAUIN	FREIBURG, GFR		

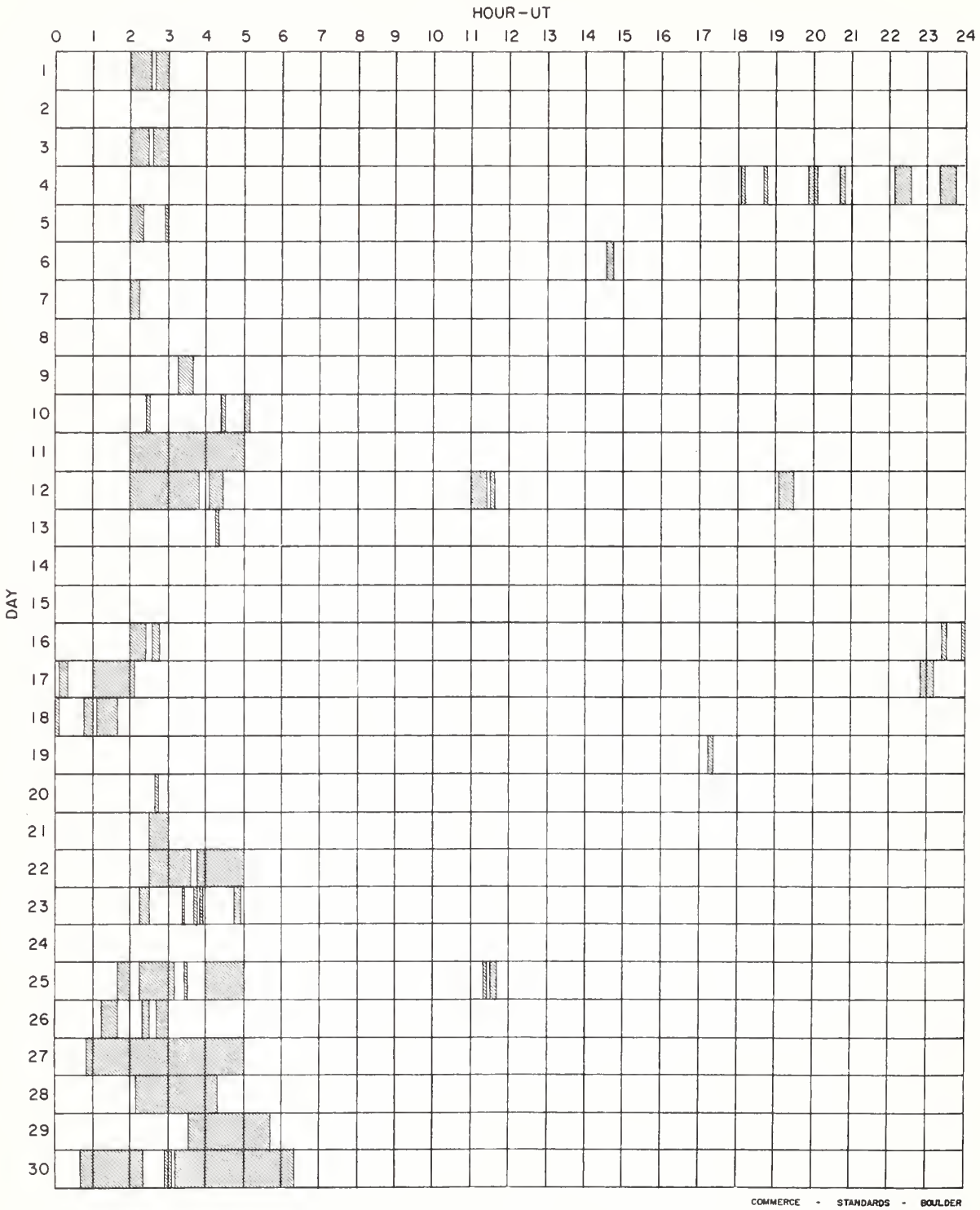
ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

E = LESS THAN D = GREATER THAN U = APPROXIMATE □= NOT REPORTED.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

SEPTEMBER 1963



Observatories Include:

Abastumani	Capetown	Haute-Provence	Istanbul	McMath-Hulbert	Sacramento Peak
Arcetri	Capri-F (German)	Herstmonceux	Kharkov	Mitaka	Tachkent
Athenes	Capri-S (Swedish)	Honolulu	Kiev-KO	Nizmir	Voroshilov
Bakou	Climax	Huancayo	Kodaikanal	Ondrejov	
Bucharest	Crimee	Ikomasan	Lockheed	Ottawa	

IONOSPHERIC EFFECTS OF SOLAR FLARES

SHORT WAVE RADIO FADEOUTS — SUDDEN PHASE ANOMALIES
SUDDEN COSMIC NOISE ABSORPTION — SUDDEN ENHANCEMENTS OF SIGNAL
SUDDEN ENHANCEMENTS OF ATMOSPHERICS — SUDDEN FREQUENCY DEVIATIONS
SOLAR NOISE BURSTS AT 18 Mc/s

NOVEMBER 1963

NOV. 1963	UNIVERSAL TIME			TYPE SWF	IMPORTANCE						BUR	WIDE SPREAD INDEX	STATIONS	KNOWN FLARE
	START	END	MAX	IMP	ABS	SCNA	SEA	SPA	SES	SFD				
13	1726	1730	1727							06			WWV10-0.6, WWV15-0.4, KKE4-0.3, KKE5-0.2	

COMMERCE - STANDARDS - BOULDER

Addenda: In CRPL-F 232 Part B, page IIIn, please add station A3 to SES events Oct. 21, 1324 UT, Oct. 22, 1335 UT and Oct. 26, 1856 UT. This will increase the "Wide-spread Index" to "3" in each case.

RIOMETER EVENTS
(PROVISIONAL)

NOVEMBER 1963

South Pole — 26 Mc/s

NOV. 1963	START UT	END UT	MAX. UT	MAX. ABSORP., tenths,db	NO. OF PEAKS	NOV. 1963	START UT	END UT	MAX. UT	MAX. ABSORP., tenths,db	NO. OF PEAKS
1	1540	1638	1614	4	1	11	2330	2341	2336	3	1
2		0312	0304	6	1	12	0308	0506	0313	9	2
2	1035	1153	1044	3	2	12	0911	1410	0942	10	1
2	1532	1828	1658	5	4	13	1124	1822	1408	6	1
3	0036	0225	0053	24	6	13	2352	0312	0128	4	4
3	0412	0734	0442	10	4	14	0508	0536	0512	4	2
3	0902	1742	1420	13	2	15	0810	0852	0812	4	2
4	0516	0700	0521	6	1	16	*				
4	1248	1254	1250	4	2	17	0907	1816	1413	8	2
4	1420	1648	1505	6	3	18	*				
5	*					19	*				
6	0150	0228	0159	5	2	20	*				
6	0859	1230	1003	8	2	21	*				
6	1410	2010	1614	9	3	22	*				
6	2128	2256	2158	11	3	23	*				
7	0216	0230	0218	4	2	24	0343	0449	0416	90	2
7	0450	1710	1313	11	4	24	0724	1730	1047	7	2
7	2007	2130	2023	7	1	25	0523	0606	0530	9	1
7	2352	0100	0000	24	1	25	0741	1701	1506	7	5
8	0225	0351	0253	35	2	26	0832	0918	0851	4	1
8	0444	2004	1318	31	6	27	*				
9	0041	0134	0043	65	1	28	0409	0606	0416	5	1
9	0158	0304	0201	21	1	29	0332	0429	0405	3	3
9	0955	1817	1413	21	3	29	1517	1707	1528	3	1
9	2135	2242	2148	3	1	30	1247	1510	1319	19	2
10	0237	0407	0246	14	1	30	2318	2346	2327	9	1
10	0842	2222	1106	23	5						
10	2319	0645	2325	36	3						
11	0907	1452	1133	11	1						
11	1645	1926	1727	9	1						

COMMERCE - STANDARDS - BOULDER

*No Event

Erratum:
The Riometer Events published in CRPL-F 232 B page IIIo for October 1963 the second date column should have been headed October 1963 instead of September 1963.

DAILY VALUES OF SOLAR FLUX AT 2800 Mc/s (10.7 cm)
RECORDED AT NATIONAL RESEARCH COUNCIL
OTTAWA, CANADA

FLUX IN WATTS/M^2/CYCLES/SECOND BANDWIDTH (x 10^{-22}) - 2 POLARIZATIONS

1963

Day	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	--	87	74	73	82	84	76	87	74	68	87	79
2	--	86	75	74	82	81	77	87	73	69	85	80
3	77	85	78	74	81	81	78	87	74	70	83	79
4	79	88	80	70	82	79	78	88	75	71	83	77
5	77	87	82	72	84	78	78	86	74	73	80	76
6	77	85	85	78	87	77	77	88	74	77	78	76
7	77	83	84	80	88	84	77	85	78	79	76	77
8	76	82	83	81	86	90	77	81	75	85	75	77
9	78	79	82	82	88	93	77	80	77	86	76	78
10	80	79	80	82	87	99	86	77	76	87	75	79
11	81	76	78	88	84	103	75	72	72	87	76	80
12	78	74	77	93	87	109	74	73	77	84	77	82
13	79	74	74	89	89	107	76	74	89	84	77	81
14	86	75	80	87	95	100	77	71	98	86	78	79
15	85	76	80	88	98	96	76	72	99	88	81	81
16	82	77	79	88	100	89	76	76	105	87	81	78
17	82	79	79	87	100	86	74	82	99	84	80	78
18	80	81	80	88	98	82	74	80	97	83	82	79
19	78	79	77	84	99	79	74	79	102	88	86	78
20	78	77	77	78	91	75	77	81	109	89	84	79
21	76	74	76	74	88	73	75	84	90	94	86	79
22	75	76	76	72	89	72	73	86	105	96	86	77
23	74	75	75	71	93	72	72	90	99	94	84	76
24	73	76	75	73	89	72	72	87	95	94	83	76
25	74	78	75	72	83	74	74	85	86	96	82	--
26	73	77	73	72	76	74	73	82	84	96	82	74
27	81	75	74	75	80	72	74	80	78	88	81	74
28	80	74	73	78	79	74	73	77	74	84	79	73
29	79		75	78	80	73	77	77	71	85	79	72
30	78		74	80	83	76	84	77	69	85	79	71
31	82		71		89		85	77	85	82		71
Mean:	78	79	78	79	88	83	76	81	85	84	81	77

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

DECEMBER 1963

ARO - OTTAWA **2800 Mc/s**

DEC. 1963	URANE	DESCRIPTIVE TYPE	START UT	DURATION HRS. MIN.	MEAN FLUX	MAXIMUM TIME	MAXIMUM FLUX	REMARKS
2	3	Simple 3	1747	1 06	1300	2	1	
6	1	Simple 1 f	1952	6	1953	3	1.5	

COMMERCE - STANDARDS - BOULDER

HOURS OF OBSERVATION, OCTOBER, NOVEMBER, DECEMBER, 1963

OBSERVING PERIOD:
October 12:00 UT - 21:50 UT
November 12:20 UT - 21:05 UT
December 13:00 UT - 20:50 UT

With the following exceptions:

(1) Observations commenced: Oct. 28 at 13:10 UT
(2) Observations ended: Nov. 14 at 19:50 UT
(3) Interruption of observations, approximately 20 minutes in duration, in the periods 16:00 - 17:00 UT and/or 20:00 - 21:00 UT on the following days:

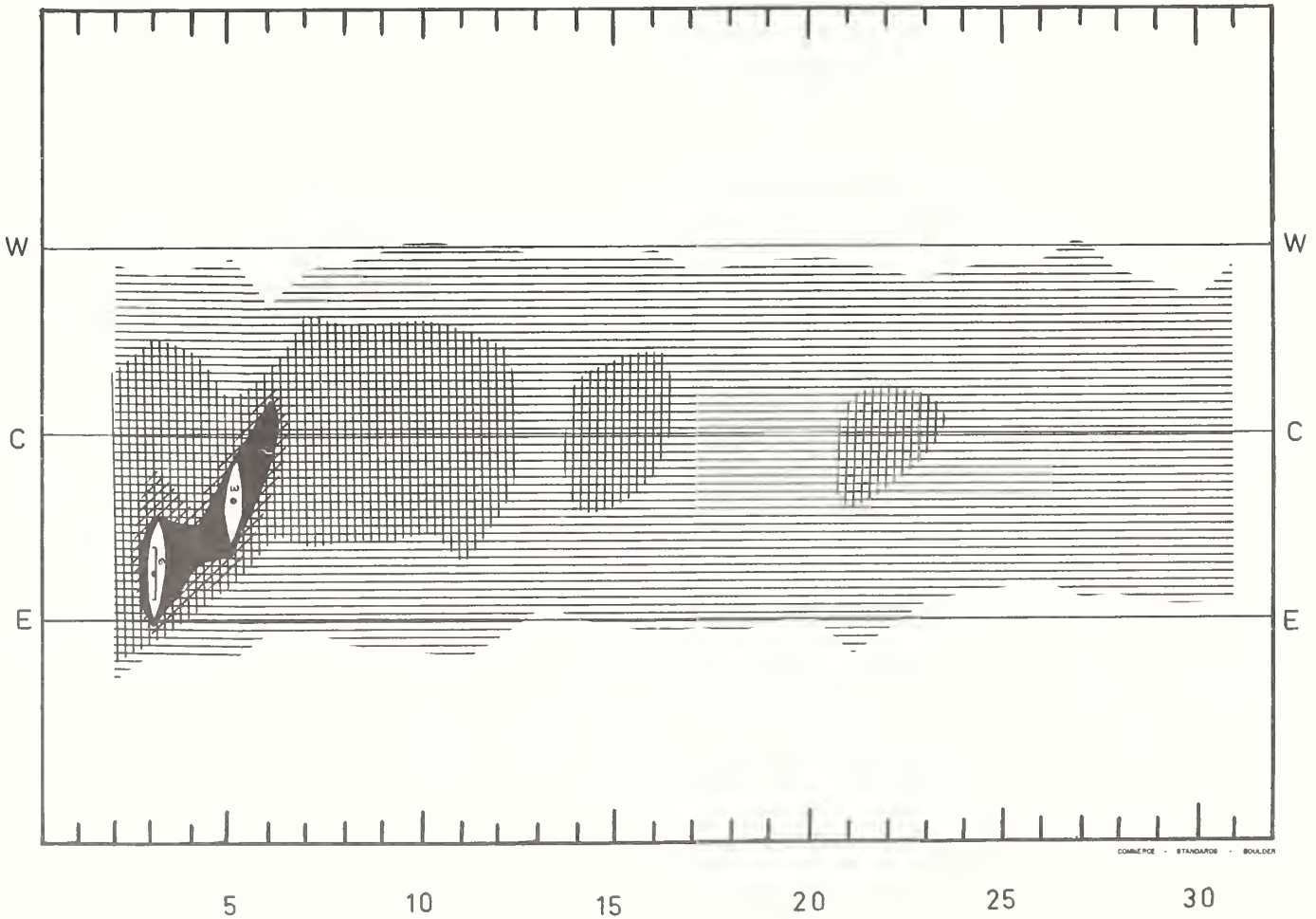
Oct. 28-30
Nov. 4-13-15-16-17
Dec. 1-2

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATIONS

DECEMBER 1963

NANÇAY

169 Mc/s



IVc

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

DECEMBER 1963

NBS BOULDER 108 Mc s

Dec. 1963	TYPE	START UT	TIME OF MAXIMUM UT	DURATION MINUTES	INTENSITY
1	7	1718	-	320	1
3	3	2048.8	2049.3	1.1	3

COMMERCE - STANDARDS - BOULDER

NOMINAL TIMES OF OBSERVATION

DECEMBER 1963

NBS BOULDER 108 Mc s

Dec. 1963	HOURS OF OBSERVATION	UT	Dec. 1963	HOURS OF OBSERVATION	UT
1	1407-2320		16	1420-2321	
2	1408-2320		17	1421-2321	
3	1409-2320		18	1422-2322	
4	1410-2320		19	1422-2322	
5	1411-1515; 1700-2320		20	1423-2322	
			21	1423-2323	
6	1412-2320		22	1423-2323	
7	1413-2320		23	1424-2324	
8	1414-2320		24	1425-2324	
9	1415-2320		25	1425-2325	
10	1416-2320		26	1425-2326	
11	1417-2320		27	1426-2326	
12	1417-1444; 1529-1813; 2217-2320		28	1426-2327	
			29	1426-2328	
			30	1427-2329	
13	1841-2320				
14	1419-2320		31	1427-2329	I 2210-2300
15	1420-2321				

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

DECEMBER 1963

High Altitude Observatory 7.6 - 41 Mc/s
Boulder

Date Dec. 1963	Bursts			
	Type	Time (U.T.)	Intensity	Frequency Range Mc/s
1 Dec	III	2112.15-2113	1	21-41
2	III	1546-1546.30	1	22-41
	III	1550.30-1551	1-	31-41
4	No Observ.	1750-1851		

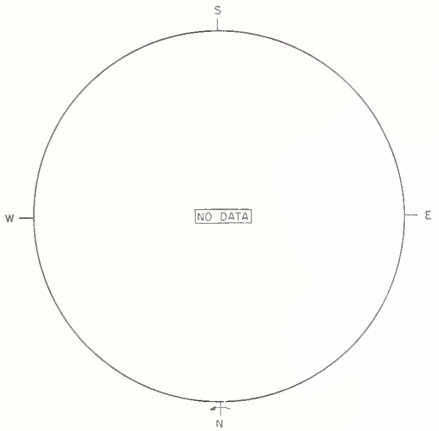
COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

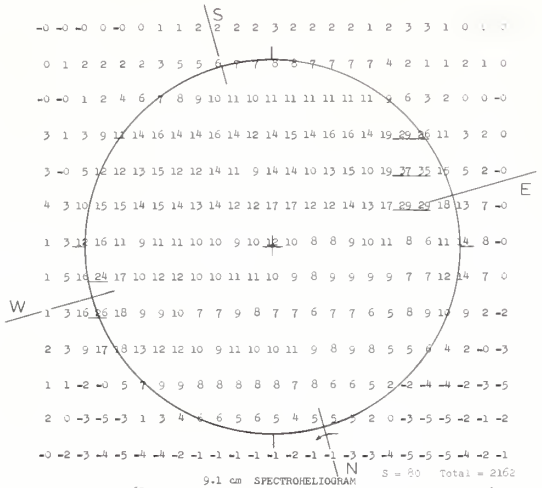
DECEMBER 1963

STANFORD

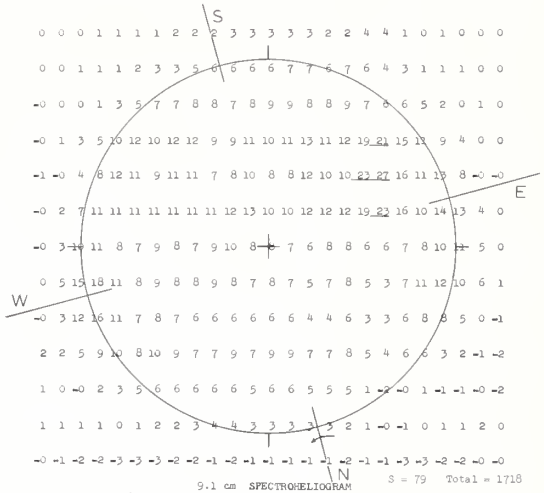
9.1 cm



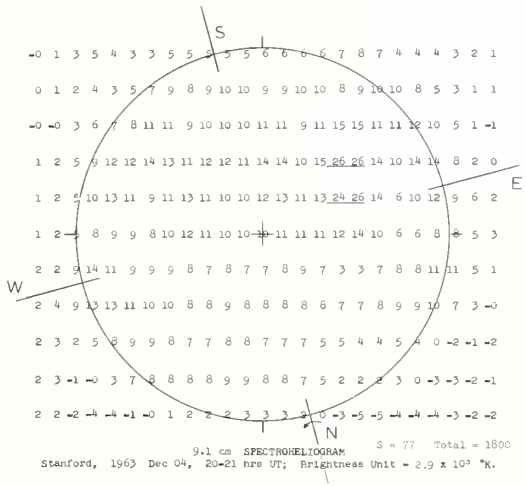
1963 DECEMBER 01



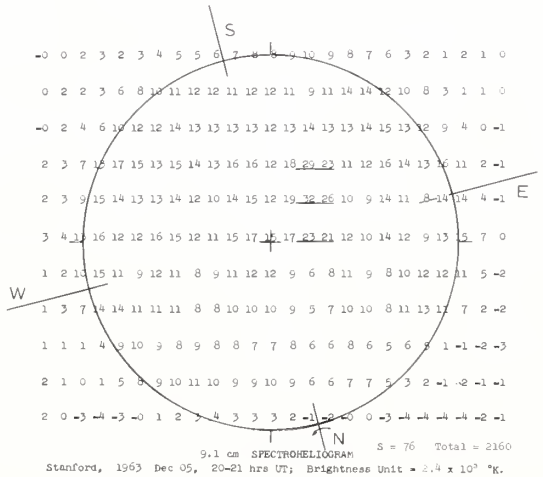
9.1 cm SPECTROHELIOGRAM S = 80 Total = 2162
Stanford, 1963 Dec 02, 20-21 hrs UT; Brightness Unit = 2.5 x 10^3 °K.



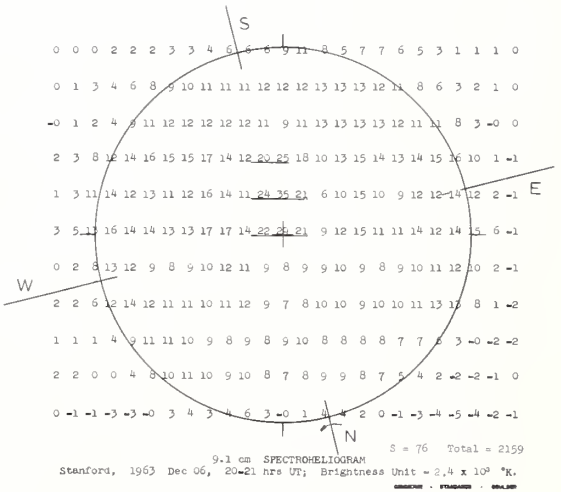
9.1 cm SPECTROHELIOGRAM S = 79 Total = 1718
Stanford, 1963 Dec 03, 20-21 hrs UT; Brightness Unit = 3.1 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 77 Total = 1800
Stanford, 1963 Dec 04, 20-21 hrs UT; Brightness Unit = 2.9 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 76 Total = 2160
Stanford, 1963 Dec 05, 20-21 hrs UT; Brightness Unit = 2.4 x 10^3 °K.

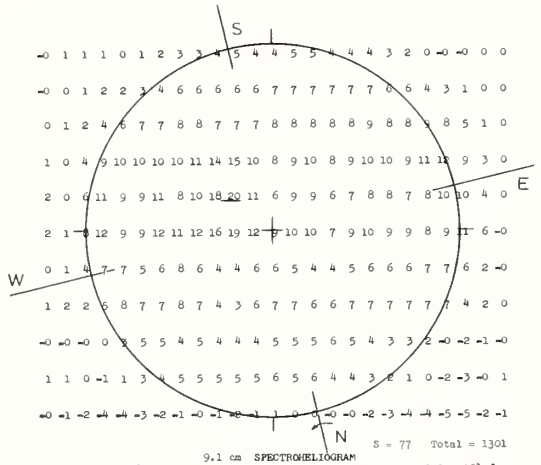


9.1 cm SPECTROHELIOGRAM S = 76 Total = 2159
Stanford, 1963 Dec 06, 20-21 hrs UT; Brightness Unit = 2.4 x 10^3 °K.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

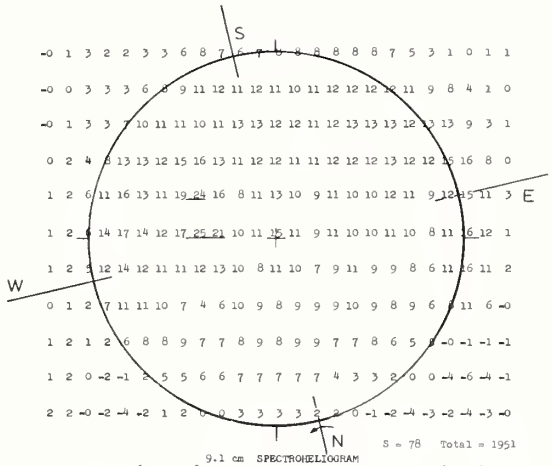
DECEMBER 1963

STANFORD **9.1 cm**



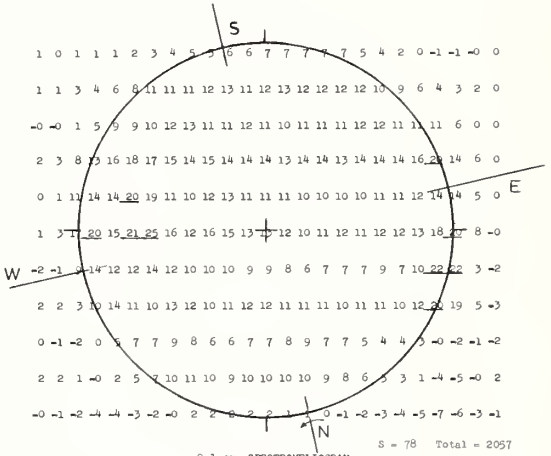
9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 07, 20-21 hrs UT; Brightness Unit = 3.9 x 10^3 °K.

S = 77 Total = 1301



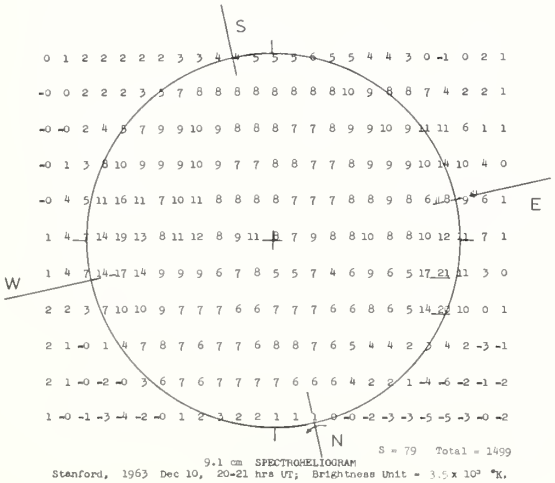
9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 08, 20-21 hrs UT; Brightness Unit = 2.6 x 10^3 °K.

S = 78 Total = 1951



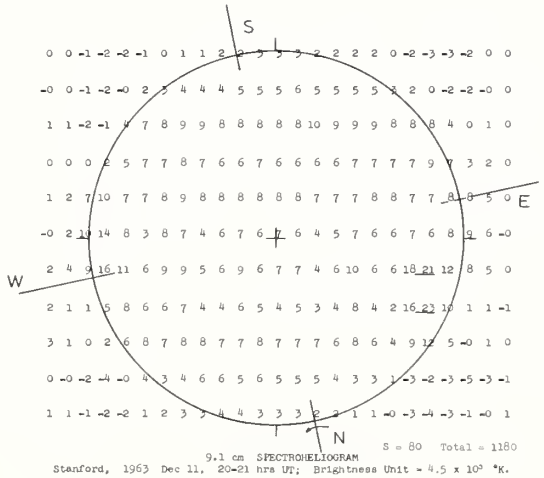
9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 09, 20-21 hrs UT; Brightness Unit = 2.5 x 10^3 °K.

S = 78 Total = 2057



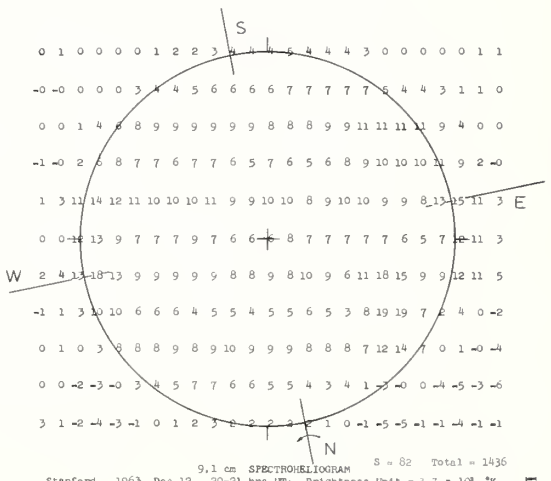
9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 10, 20-21 hrs UT; Brightness Unit = 3.5 x 10^3 °K.

S = 79 Total = 1499



9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 11, 20-21 hrs UT; Brightness Unit = 4.5 x 10^3 °K.

S = 80 Total = 1180



9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 12, 20-21 hrs UT; Brightness Unit = 3.7 x 10^3 °K.

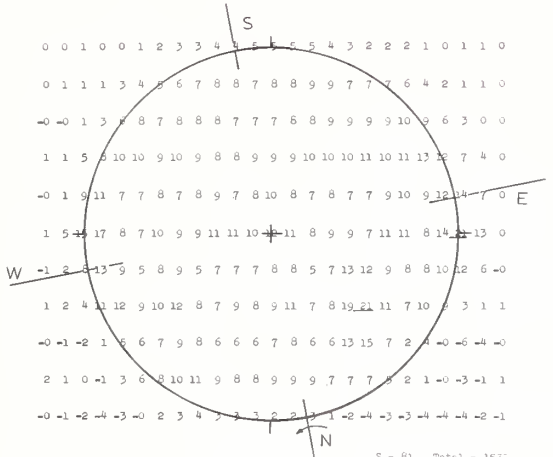
S = 82 Total = 1436

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

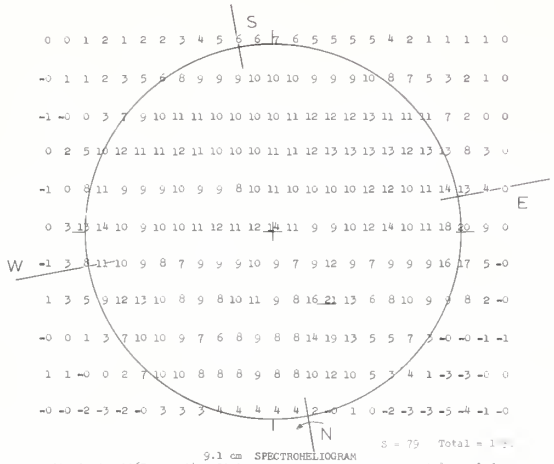
DECEMBER 1963

STANFORD

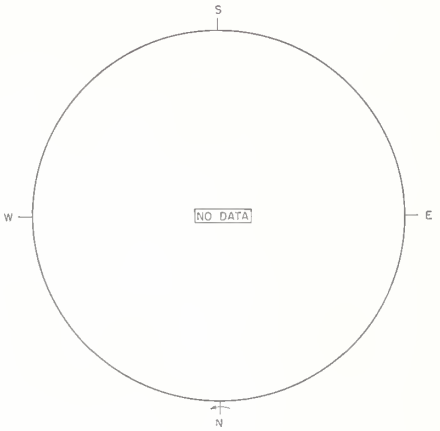
9.1 cm



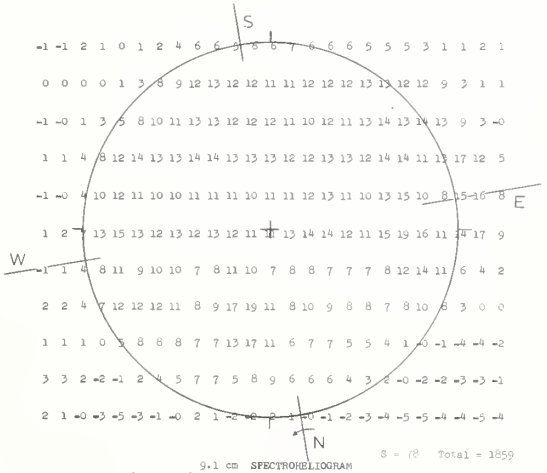
9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 13, 20-21 hrs UT; Brightness Unit = 3.3 x 10^3 °K.



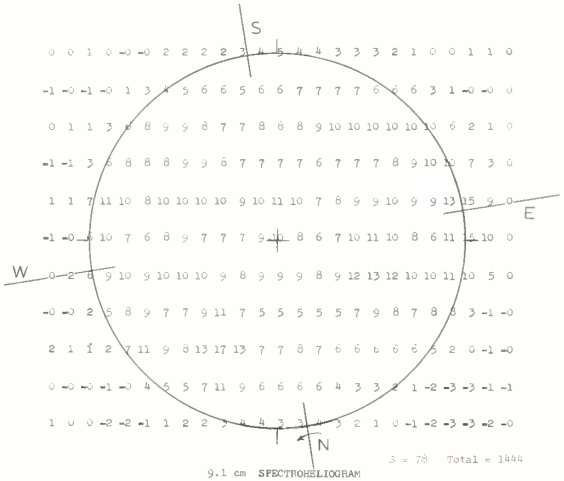
9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 14, 20-21 hrs UT; Brightness Unit = 2.8 x 10^3 °K.



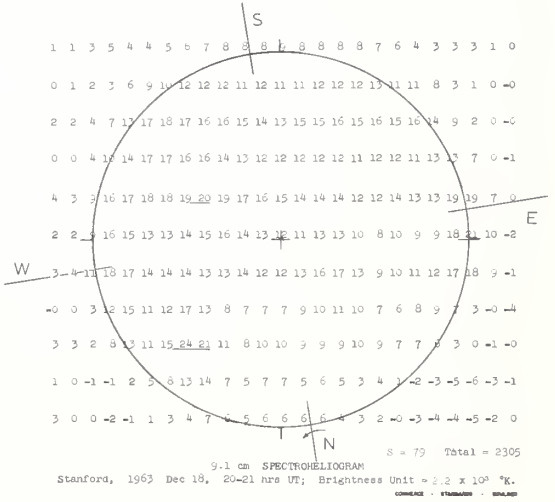
1963 DECEMBER 15



9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 16, 20-21 hrs UT; Brightness Unit = 2.7 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 17, 20-21 hrs UT; Brightness Unit = 3.5 x 10^3 °K.

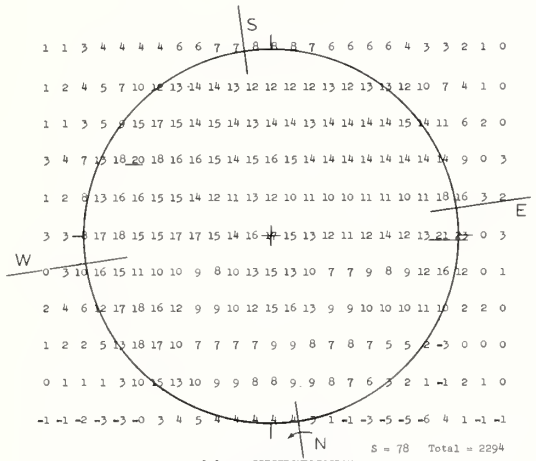


9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 18, 20-21 hrs UT; Brightness Unit = 2.2 x 10^3 °K.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

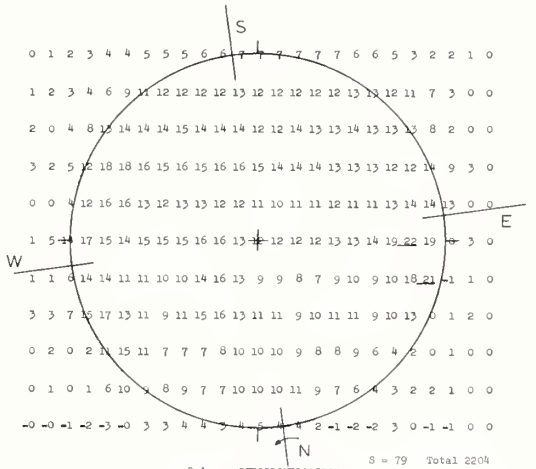
DECEMBER 1963

STANFORD **9.1 cm**



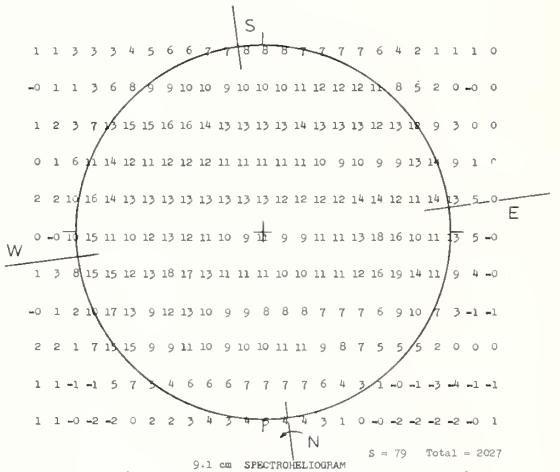
S = 78 Total = 2294

9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 19, 20-21 hrs UT; Brightness Unit = 2.2 x 10^3 °K.



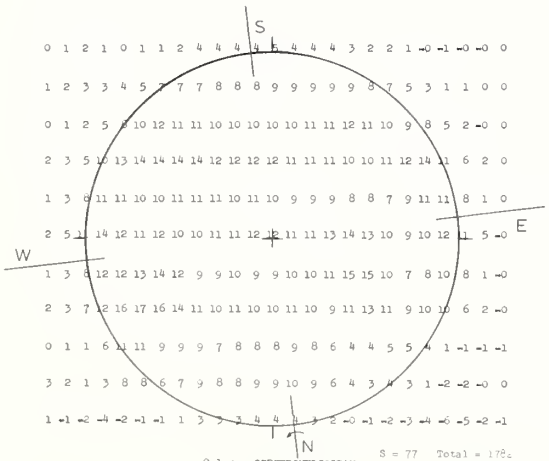
S = 79 Total 2204

9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 20, 20-21 hrs UT; Brightness Unit = 2.3 x 10^3 °K.



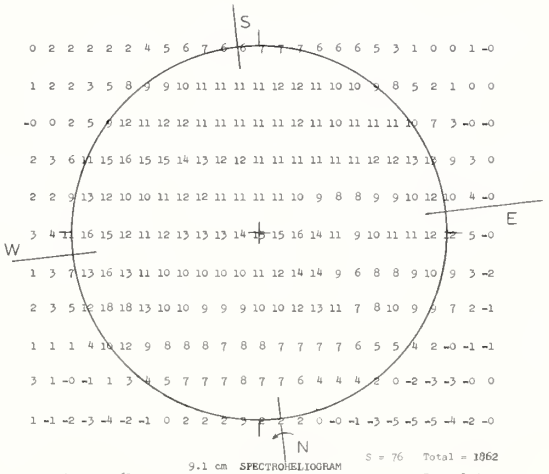
S = 79 Total = 2027

9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 21, 20-21 hrs UT; Brightness Unit = 2.5 x 10^3 °K.



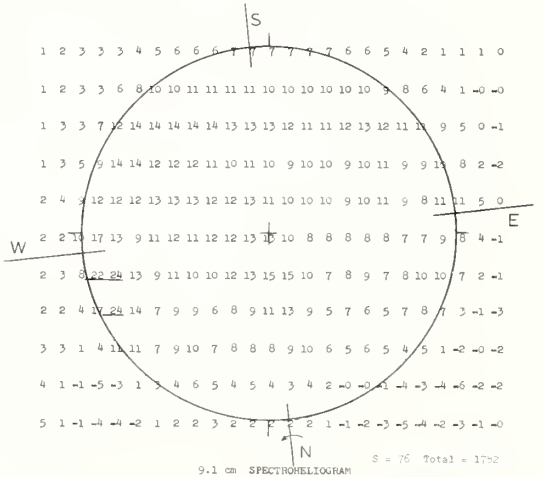
S = 77 Total = 178₂

9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 22, 20-21 hrs UT; Brightness Unit = 2.8 x 10^3 °K.



S = 76 Total = 1862

9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 23, 20-21 hrs UT; Brightness Unit = 2.7 x 10^3 °K.



S = 76 Total = 1752

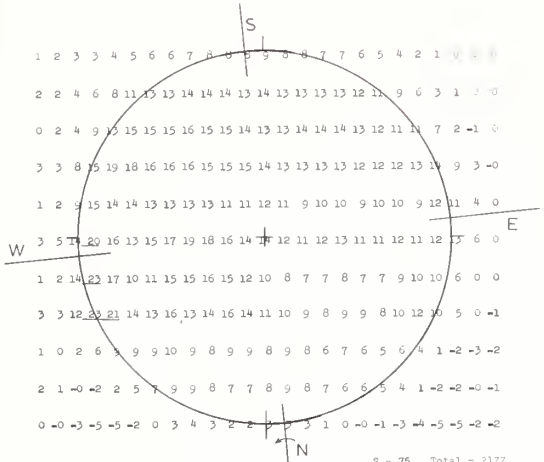
9.1 cm SPECTROHELIOGRAM
Stanford, 1963 Dec 24, 20-21 hrs UT; Brightness Unit = 2.[illegible] x 10^3 °K.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

DECEMBER 1963

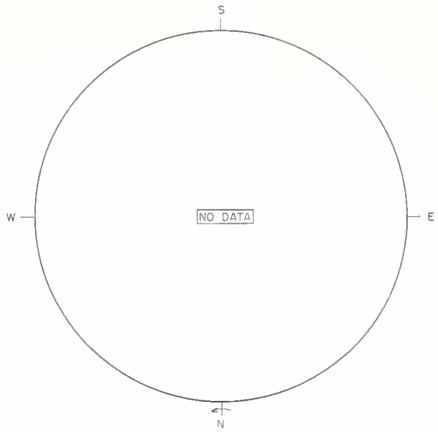
STANFORD

9.1 cm

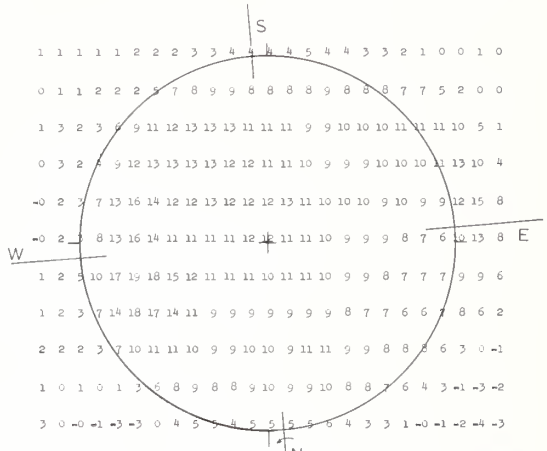


9.1 cm SPECTROHELIOGRAM S = 75 Total = 2177

Stanford, 1963 Dec 25, 20-21 hrs UT: Brightness Unit = 2.2 x 10^3 °K.

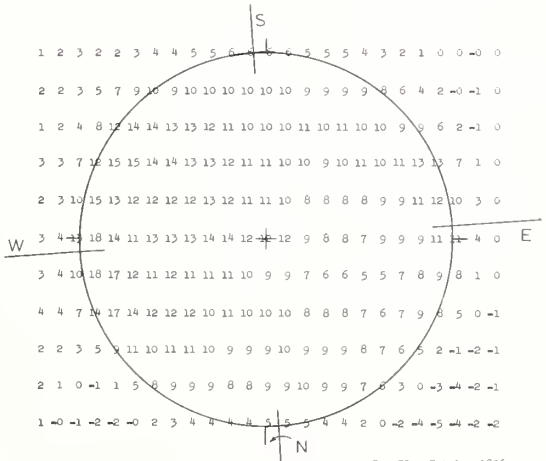


1963 DECEMBER 26



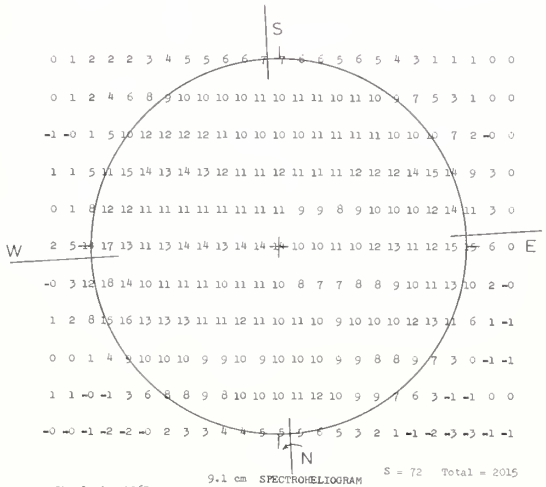
9.1 cm SPECTROHELIOGRAM S = 74 Total = 1916

Stanford, 1963 Dec 27, 20-21 hrs UT; Brightness Unit = 2.5 x 10^3 °K.



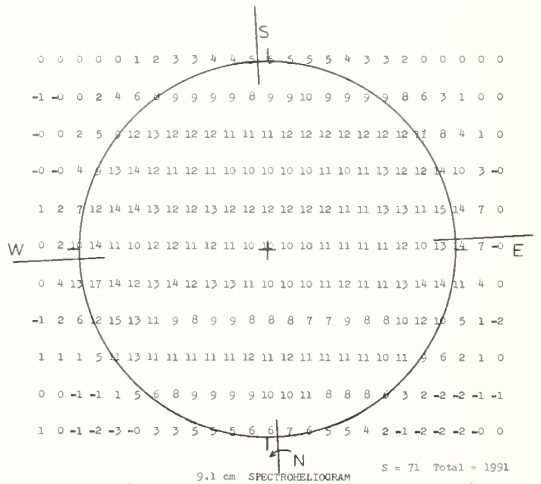
9.1 cm SPECTROHELIOGRAM S = 73 Total = 1896

Stanford, 1963 Dec 28, 20-21 hrs UT; Brightness Unit = 2.5 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 72 Total = 2015

Stanford, 1963 Dec 29, 20-21 hrs UT; Brightness Unit = 2.3 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 71 Total = 1991

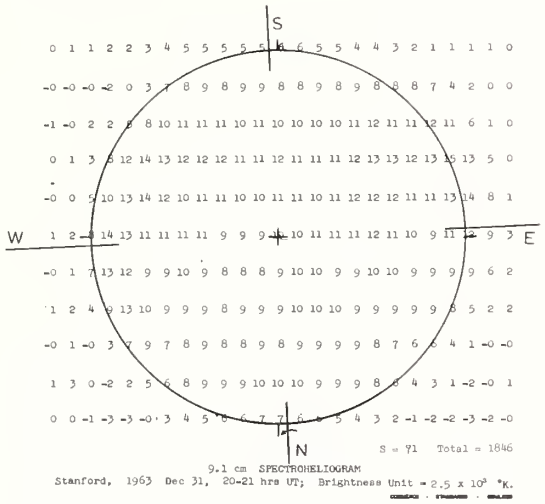
Stanford, 1963 Dec 30, 20-21 hrs UT; Brightness Unit = 2.3 x 10^3 °K.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

DECEMBER 1963

STANFORD

9.1 cm



9.1 cm SPECTROHELIOGRAM

Stanford, 1963 Dec 31, 20-21 hrs UT; Brightness Unit = 2.5 x 10^3 °K.

COSMIC RAY INDICES

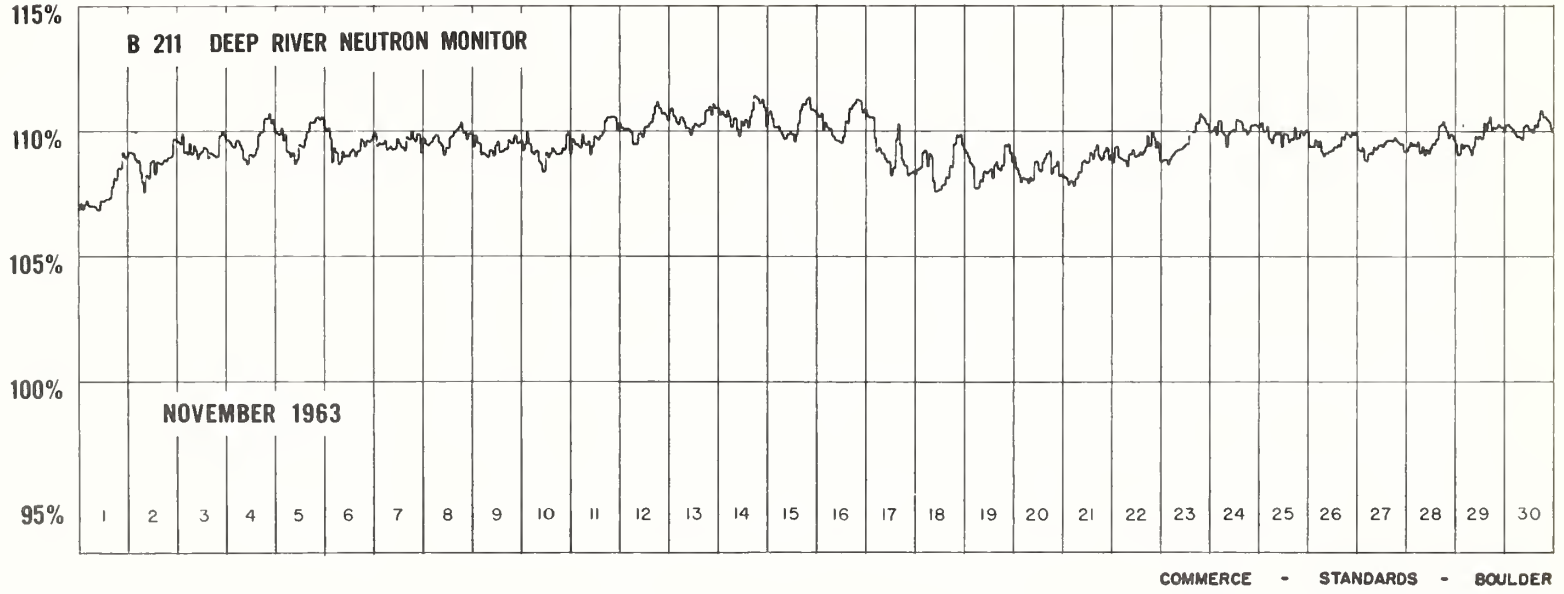
(Climax Neutron Monitor)

IGC Station B 305

Data for December 1963 will be published next month.

COSMIC RAY INDICES

(Pressure Corrected Hourly Totals)

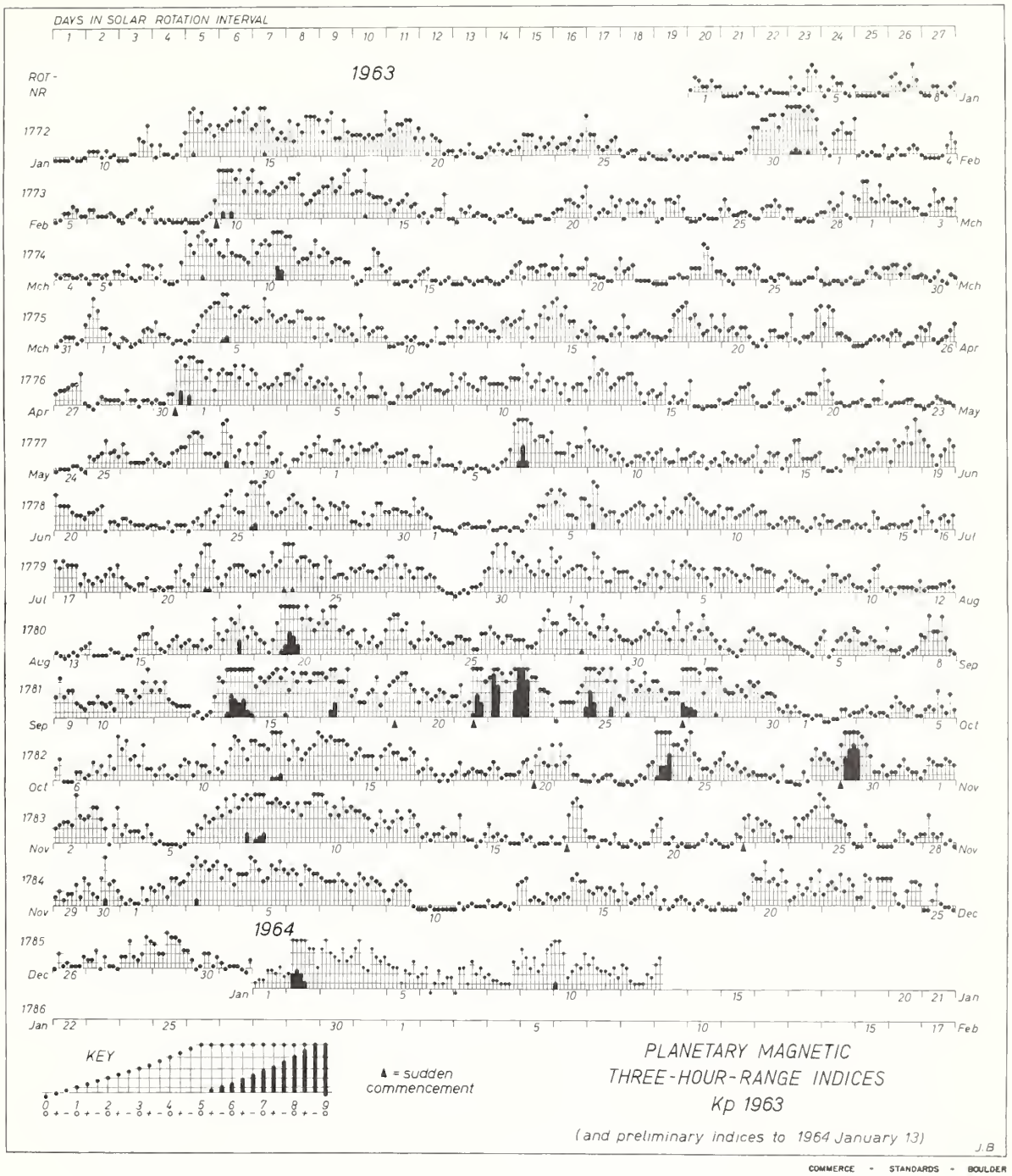


GEOMAGNETIC ACTIVITY INDICES

NOVEMBER 1963

Nov. 1963	C	Values Kp Three hour Gr. interval 1 2 3 4	5 6 7 8	Sum	Ap	Final Selected Days
1	0.6	1+ 3- 2+ 2o	2o 3- 2+ 2o	17+	8	Five
2	0.9	2o 2+ 3- 3-	2+ 5o 3+ 3o	23+	16	Quiet
3	0.8	3+ 4o 4o 3o	2o 0+ 2+ 4o	23o	16	
4	0.3	1+ 2+ 2- 2-	2- 1o 2+ 1+	13+	6	5
5	0.0	0+ 1- 0+ 0+	0+ 0+ 0o 0+	3-	2	16
						18
6	1.0	2- 1+ 2+ 2o	3+ 3- 3o 4o	20+	12	19
7	1.5	3+ 5- 4- 5o	4o 5- 6o 5-	36o	39	21
8	1.5	5+ 6- 6o 4+	4+ 5- 4+ 4o	39-	48	
9	1.4	4+ 4- 4+ 3+	4+ 4+ 5o 5o	34+	33	
10	1.2	5o 4+ 3+ 4o	3+ 5- 4- 4o	32+	29	
11	1.0	4- 4- 3+ 3o	2- 2+ 4- 3-	24o	16	Five
12	0.8	2o 3- 4- 3o	2- 4- 3+ 2+	22+	14	Disturbed
13	0.2	1o 1+ 1- 1+	1+ 2o 1o 1+	10o	5	
14	0.2	1+ 3+ 1o 1-	1- 0o 0+ 1+	9-	5	7
15	0.1	2+ 1o 1+ 1-	1o 0+ 0+ 0+	7+	4	8
						9
16	0.0	1+ 1- 1o 0o	0+ 0+ 0+ 1o	5o	3	10
17	1.0	0+ 0+ 1o 3+	4+ 5- 4o 2-	20-	16	24
18	0.0	1o 1o 0o 1-	1- 0+ 1+ 0+	5+	3	
19	0.0	0o 0o 1- 0+	0o 0+ 0+ 2-	3+	2	
20	0.1	2+ 3o 0+ 0+	1o 0o 0+ 0o	7+	4	
21	0.0	0o 0o 0+ 1-	1+ 0+ 1- 0+	4-	2	Ten
22	0.5	0o 0o 0+ 1+	1o 3o 3+ 2-	11-	6	Quiet
23	0.4	3o 2+ 3- 2+	1+ 1- 2- 1o	15o	8	
24	1.2	1o 3o 2+ 3o	3+ 4- 4o 5o	25+	20	5
25	0.7	5- 4o 3+ 3-	3- 2+ 1+ 0+	21+	16	13
						15
26	0.0	0o 0o 2+ 1+	1- 0o 0o 0o	4+	2	16
27	0.1	0o 1- 2- 1+	1- 0+ 1o 1+	7o	4	18
28	0.2	1+ 3+ 1+ 1o	1+ 0+ 1- 0o	9+	5	19
29	0.5	1+ 2o 1o 2-	2- 3- 1+ 3+	15o	8	20
30	1.0	3- 2- 1+ 3+	6- 3- 3o 2o	22+	18	21
						26
						27
Mean:	0.57			Mean:	12	

COMMERCE - STANDARDS - BOULDER



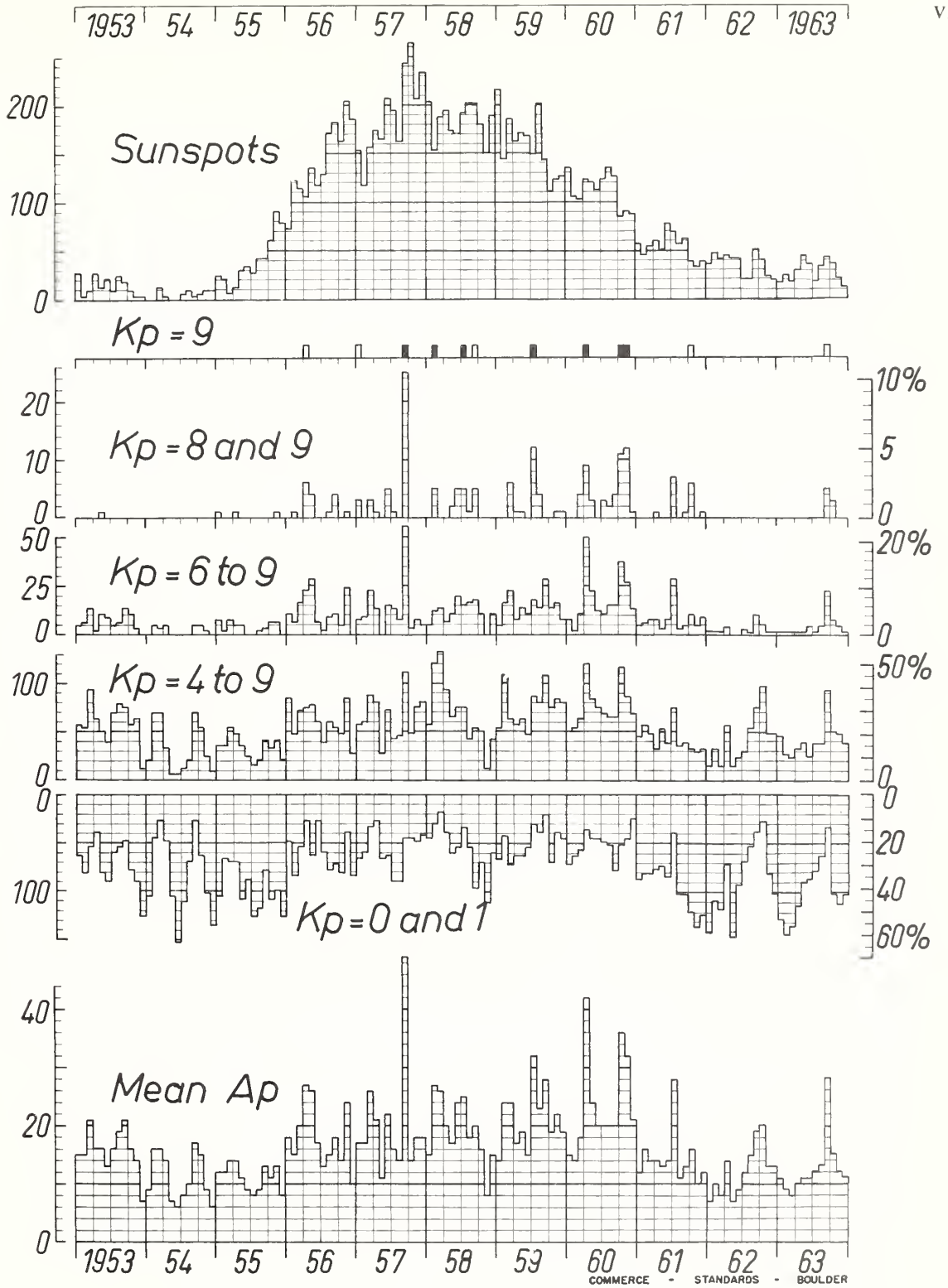
COMMERCE - STANDARDS - BOULDER

R	Rot.-Nr.	1st day	C9
665 532 122	19	J 23	1 23 12 1 5 1 5 1 35 443 641 | 2 432
477 643 112		F 19	2 432 244 22 2 1462 33 421 2 | 243 4 1
465 332 213	62	M 18	243 4 1 12 2 13 243 267 636 521 | 22 232
655 433 433	1762	A 14	22 232 356 3 3 322 112 21 52 1 1 | 2 3 442
322 454 432	63	M 11	2 3 442 3 1 3 1 5 21 323 | 2 54
333 543 333	64	J 7	2 54 2 123 1 1 3 341 25 444 222 | 543 23
222 222 211	65	J 4	543 231 222 321 343 224 476 521 | 363 312
111 124 332	66	J 31	363 312 556 53 12 555 541 641 542 | 1 4666
135 544 422	67	A 27	1 4666 676 454 433 275 342 216 435 | 41 622
444 223 553	68	S 23	41 622 547 533 343 665 623 635 246 | 345 566
333 221 224	69	O 20	345 566 665 342 244 5 5 421 3 1 6 | 62 5
531 213 431	1770	N 16	62 5 654 512 226 2 42 1 1 63 | 433 67
213 211 231	71	O 13	433 677 65 3 1 41 1 1 31 2 1 1 | 66
123 211 223	19	J 9	1 66 665 451 12 32 1 674 | 27
321 112 211	63	F 5	27 556 521 21 1 1 1 4 2 | 265
232 211 211		M 4	265 753 2 1 21 3 1 3 56
224 444 31	1775	M 31	3 56 542 2 234 41 432 32 | 2 566
122 454 553	76	A 27	2 566 452 213 445 253 1 1 12 2 | 245
223 2256 642	77	M 24	245 323 31 47 321 1 1 12 253 | 321 5
122 221 112	78	J 20	321 1 5643 231 4553 343 1 1 2 | 421 63
122 144 421	79	J 17	421 63 563 44 65 442 333 212 2 1 | 2 26
123 422 232	1780	A 13	2 126 676 252 2246 643 442 212 24 | 425 427
2366 652 1 1	81	S 9	425 427 667 464 787 576 675 3 1 2 | 34 25
233 433 434	82	O 6	34 125 666 441 14 2 742 176 2 | 441 36
31 1 12 231	83	N 2	44 1 367 766 441 1 4 1 254 | 25 366
222 211 111	84	N 29	25 366 654 42 2 321 1 533 42 | 34 1
1	1785	026	34 1 66 52 122 56 32
	19	J 22	preliminary
		F 18	
	64	M 16	

Symbol		1	2	3	4	5	6	7	8	9
R =	0	1 15	16 30	31 45	46 60	61 80	81 100	101 130	131 170	171
C9 =	0	1	2	3	4	5	6	7	8	9
Cp =	0.0 0.1	0.2 0.3	0.4 0.5	0.6 0.7	0.8 0.9	1.0 1.1	1.2 1.4	1.5 1.8	1.9	2.0 2.5
Ap =	0 4	5 7	8 10	11 13	14 17	18 24	25 40	41 91	92 140	141 400

Daily Geomagnetic Character Figures C9 and Sunspot Numbers R

COMMERCE - STANDARDS - BOULDER



Monthly Sunspot Numbers, Kp-Frequencies, and Mean Ap, 1953 - 1963

by J. Bartels, Chairman IAGA,
Commission Number 5

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

NOVEMBER 1963

NORTH ATLANTIC

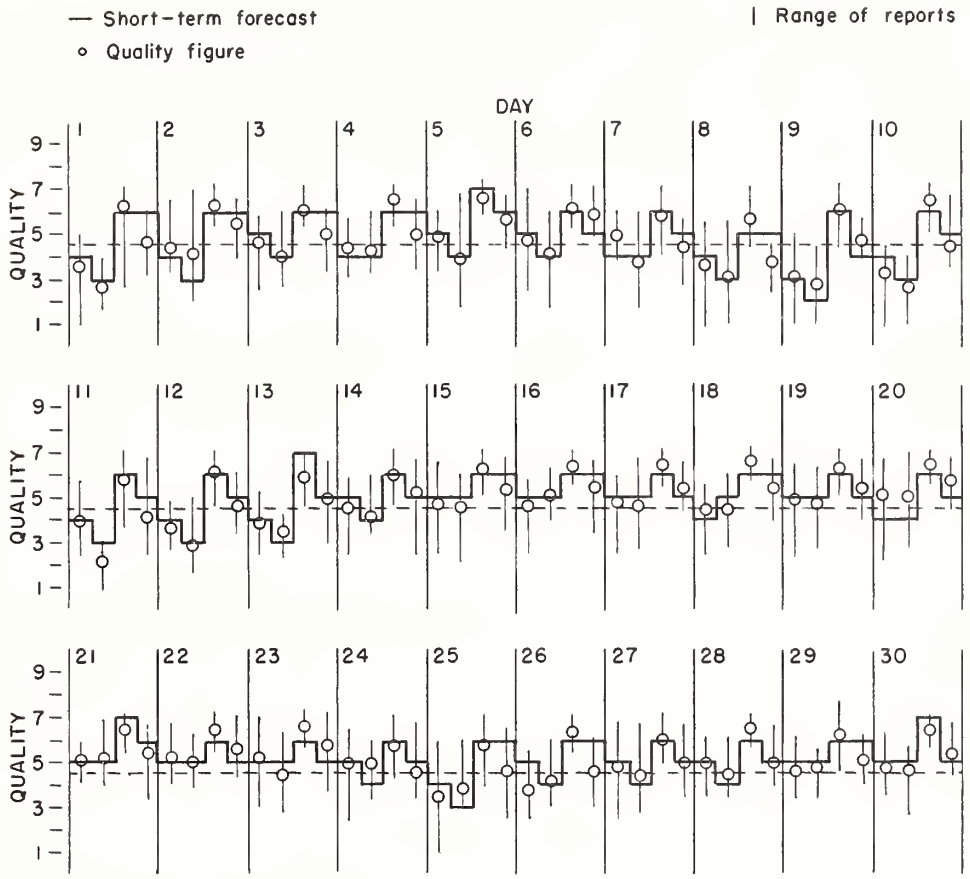
NOV. 1963	NORTH ATLANTIC 6-HOURLY QUALITY FIGURES				SHORT-TERM FORECASTS ISSUED ABOUT ONE HOUR IN ADVANCE OF.				WHOLE DAY	ADVANCE FORECASTS (J-REPORTS) FOR WHOLE DAY; ISSUED IN ADVANCE BY:		GEOMAGNETIC K_{FR}	
	00 TO 06	06 TO 12	12 TO 18	18 TO 24	00	06	12	18	INDEX	1-7 DAYS FINAL J_S	1-7 DAYS 1-3 DAYS SDW J	HALF (1)	DAY (2)
01	4-	3-	6+	5-	4	3	6	6	(4o)	5	5	2	2
02	4+	4+	6+	6-	4	3	6	6	5-	5	5	2	3
03	5-	4o	6o	5o	5	4	6	6	5-	5	5	3	2
04	4+	4+	7-	5o	4	4	6	6	5o	6	6	2	2
05	5o	4o	7-	6-	5	4	7	6	5+	6	6	1	1
06	5-	4o	6+	6o	5	4	6	5	5o	5	5	2	3
07	5o	4-	6-	4+	4	4	6	5	(4+)	4	4	(4)	(4)
08	4-	3o	6-	4-	4	3	5	5	(4-)	4	4	(5)	(4)
09	3o	3-	6o	5-	3	2	6	4	(4-)	4	4	(4)	(4)
10	3+	3-	6+	4+	4	3	6	5	(4o)	5	5	(4)	3
11	4o	2+	6-	4o	4	3	6	5	(4-)	5	5	(4)	2
12	4-	3o	6o	5-	4	3	6	5	(4o)	5	5	3	2
13	4-	3+	6o	5o	4	3	7	5	(4+)	5	5	1	1
14	4+	4+	6o	5+	5	4	6	5	5-	5	5	2	1
15	5-	5-	6+	5+	5	5	6	6	5+	5	5	1	0
16	5-	5o	6+	6-	5	5	6	6	5+	5	5	1	0
17	5-	5-	6+	5+	5	5	6	5	5+	6	6	1	3
18	4+	4+	7-	5+	4	5	6	6	5+	6	6	1	1
19	5o	5-	6+	5+	5	5	6	5	5+	5	5	1	1
20	5o	5o	7-	6-	4	4	6	5	6-	4	4	2	0
21	5+	5+	7-	6-	5	5	7	6	6-	4	4	1	0
22	5+	5o	7-	6-	5	5	6	5	6-	4	4	0	2
23	5+	4+	7-	6o	5	5	6	5	6-	5	5	3	1
24	5o	5o	6o	5-	5	4	6	5	5+	6	6	2	3
25	3+	4o	6o	5-	4	3	6	6	(4+)	6	6	3	1
26	4-	4+	6+	5-	5	4	6	6	(4+)	6	6	1	0
27	5o	4+	6+	5o	5	4	6	5	5o	6	6	1	1
28	5o	4+	7-	5o	5	4	6	5	5+	5	5	2	1
29	5-	5-	6+	5+	5	5	6	6	5+	5	5	2	2
30	5-	5-	6+	5+	5	5	7	5	5+	6	6	2	3
Score: Quiet Periods P					15	8	21	13		9	9		
S					2	2	9	13		8	8		
U					0	0	0	0		0	0		
F					0	0	0	0		3	3		
Disturbed Periods P					9	14	0	0		3	3		
S					4	6	0	4		5	5		
U					0	0	0	0		0	0		
F					0	0	0	0		2	2		

NORTH PACIFIC

NORTH PACIFIC 6-HOURLY QUALITY FIGURES			SHORT-TERM FORECASTS ISSUED AT			WHOLE DAY	ADVANCE FORECASTS (J_P REPORTS) FOR WHOLE DAY, ISSUED IN ADVANCE BY:		GEOMAGNETIC K_{SI}	
03 TO 11	11 TO 19	19 TO 03	02	09	18	INDEX	1-7 DAYS FINAL J_{PS}	1-7 DAYS 1-3 DAYS SDW J_P	HALF (1)	DAY (2)
6	5	6	6	5	5	6	5	5	2	1
4	5	6	5	4	4	5	5	5	2	2
5	5	6	5	4	6	5	6	6	3	2
5	4	5	5	5	6	5	6	6	1	1
5	4	7	4	5	5	5	6	6	0	0
6	5	6	5	5	6	6	5	5	1	3
5	4	5	6	4	3	(4)	5	5	(4)	(5)
4	4	6	3	3	4	(4)	4	4	(5)	3
4	3	5	4	4	5	(3)	4	4	(4)	(4)
5	5	6	5	5	5	5	4	4	(4)	3
4	5	6	5	5	6	5	5	5	(4)	2
5	4	6	6	5	5	(4)	5	5	3	2
5	5	6	5	5	6	5	5	5	1	1
6	5	7	5	6	6	6	6	6	1	0
5	6	7	5	6	7	6	6	6	1	0
6	6	6	5	6	7	6	6	6	0	0
5	6	6	5	6	5	5	6	6	1	3
5	6	5	4	6	6	5	4	4	0	0
5	6	7	5	6	7	6	4	4	0	0
5	6	7	6	6	7	6	4	4	1	0
5	5	6	6	5	7	5	6	6	0	0
6	4	7	5	6	5	5	6	6	1	2
6	6	7	5	5	7	6	6	6	2	0
6	5	5	6	6	5	5	6	6	2	(4)
5	6	7	4	5	6	5	6	6	3	2
5	5	8	5	5	7	6	6	6	1	0
4	5	8	5	6	7	5	6	6	1	0
7	6	8	7	5	7	5	6	6	1	0
5	6	8	6	5	7	7	6	6	1	2
5	6	8	6	5	6	6	6	6	2	3
			11	13	10		9			
			14	10	14		15			
			0	0	4		0			
			0	0	2		2			
			1	1	0		1			
			4	5	0		3			
			0	0	0		0			
			0	1	0		0			

NORTH ATLANTIC

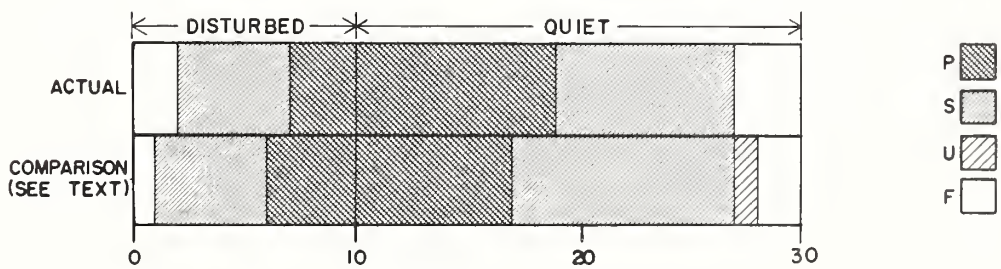
NOVEMBER 1963



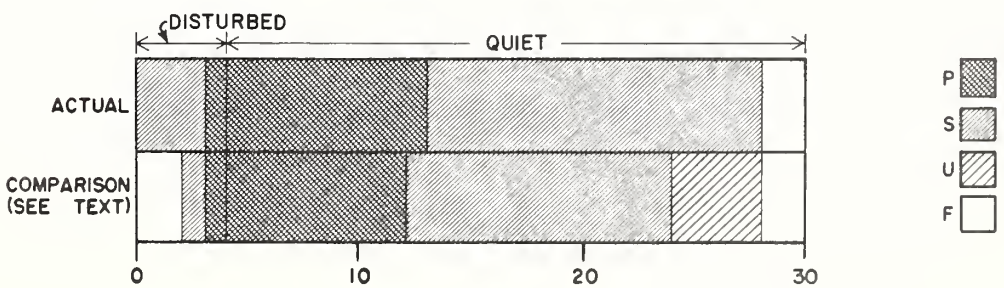
Outcome of advance forecasts--final estimates (1 to 7 days ahead)

COMMERCE - STANDARDS - BOULDER

NORTH ATLANTIC

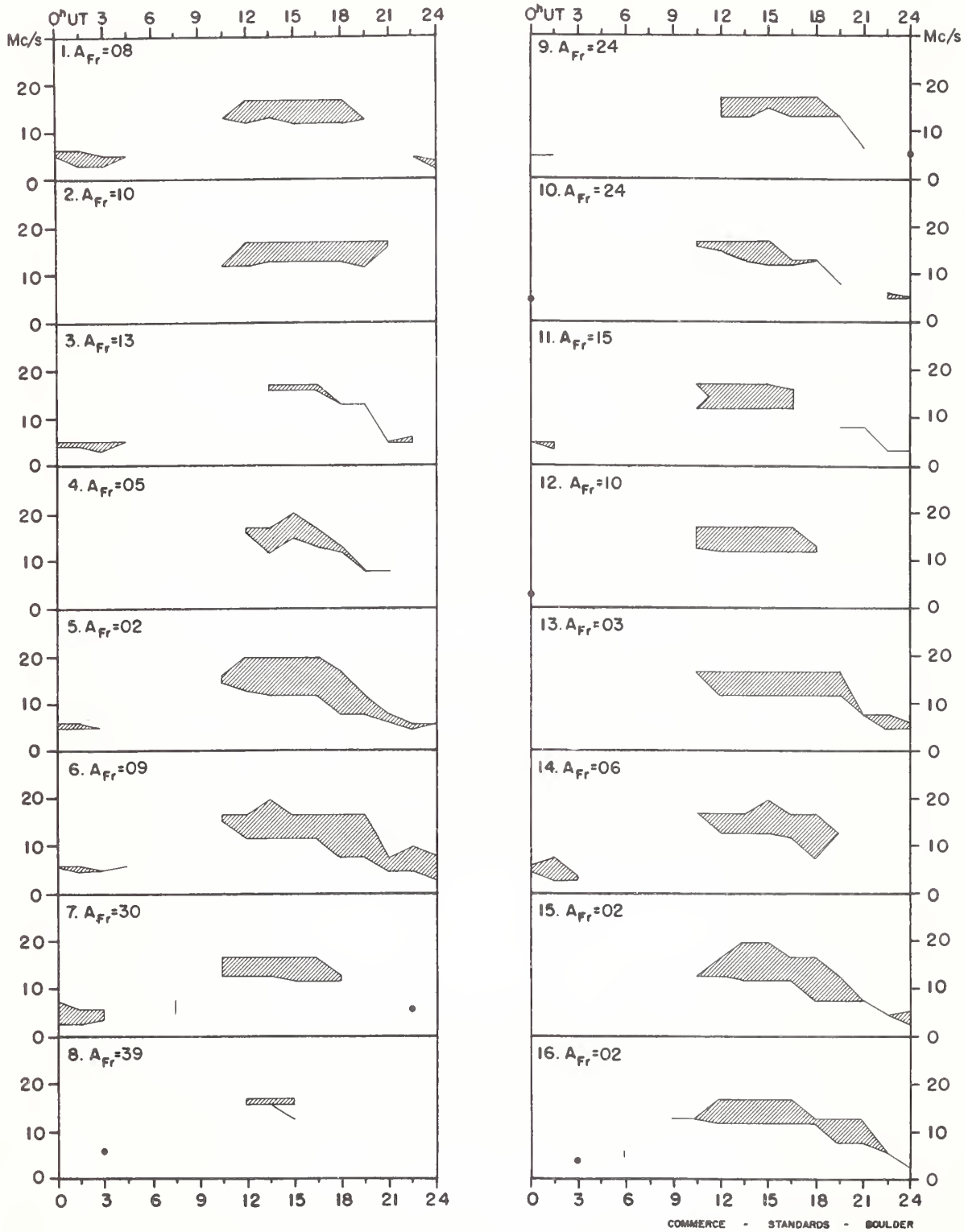


NORTH PACIFIC

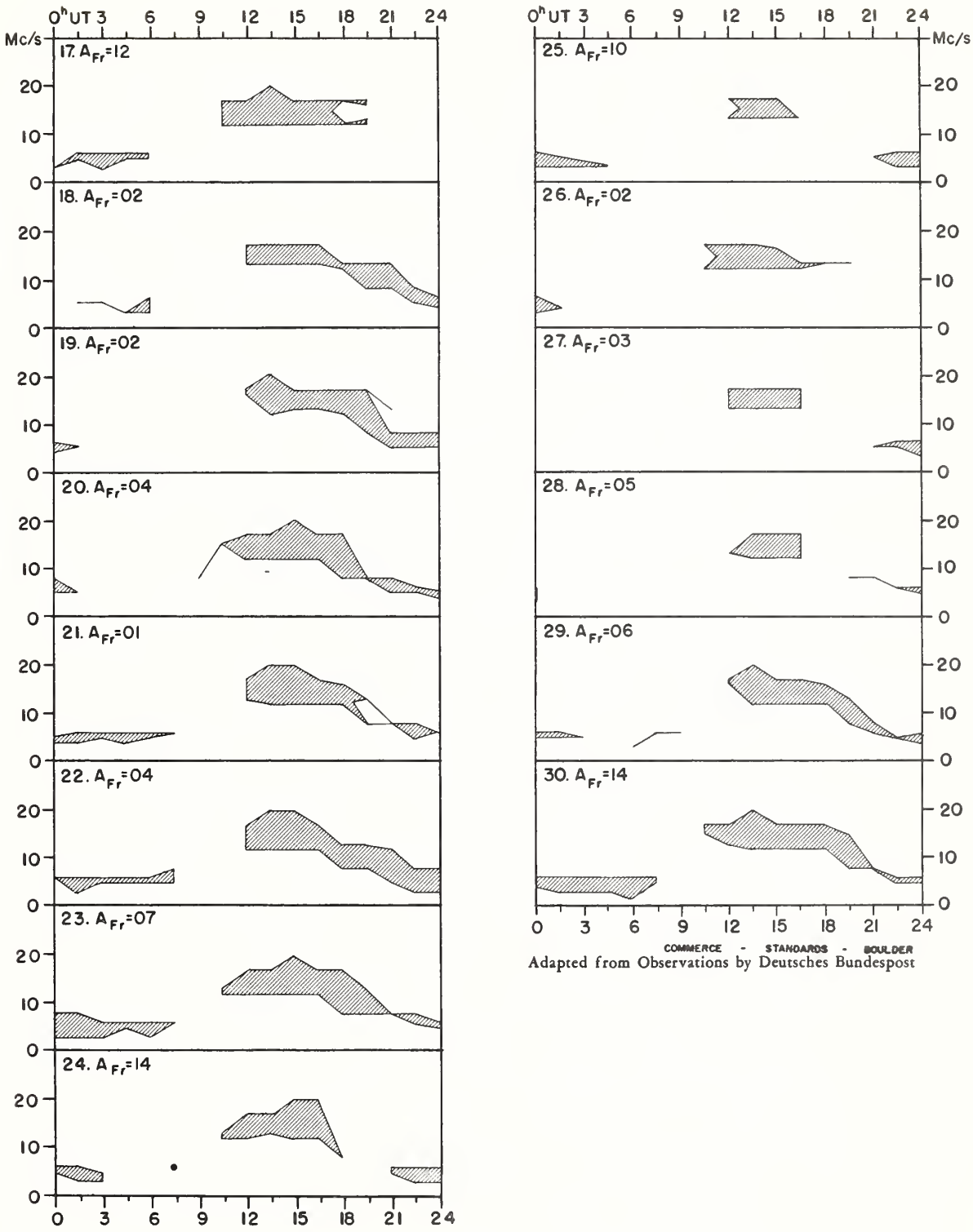


COMMERCE - STANDARDS - BOULDER

NOVEMBER 1963



NOVEMBER 1963



COMMERCE - STANDARDS - BOULDER

Adapted from Observations by Deutsches Bundespost

IQSY ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

DECEMBER 1963

Dec. 1963	TIME OF ISSUE UT	ADVANCE GEOPHYSICAL ALERT	WORLDWIDE GEOPHYSICAL ALERT			
			NO.	TYPE	TIMING	ELABORATION
29	0400		22	Magnetic Storm	Expected	
30	0400		23	Magnetic Storm	Expected	
31	0400		24	NIL. "SPECIAL NOTICE. Tomorrow is formal beginning of IQSY".		

COMMERCE - STANDARDS - BOULDER

USCOMM-NBS-DC